U.S. Army Center for Health Promotion and Preventive Medicine



PYROTECHNICS HEALTH RISK ASSESSMENT NO. 39-EJ-1485-00 RESIDENTIAL EXPOSURE FROM INHALATION OF AIR EMISSIONS FROM THE M18 GREEN-COLORED SMOKE GRENADE **DEPARTMENT OF DEFENSE IDENTIFICATION CODE: G940**

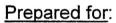






Prepared by:

Environmental Health Risk Assessment & Risk Communication Program



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Readiness Thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

The lineage of the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) can be traced back over 50 years. This organization began as the U.S. Army Industrial Hygiene Laboratory, established during the industrial buildup for World War II, under the direct supervision of the Army Surgeon General. Its original location was at the Johns Hopkins School of Hygiene and Public Health. Its mission was to conduct occupational health surveys and investigations within the Department of Defense's (DOD's) industrial production base. It was staffed with three personnel and had a limited annual operating budget of three thousand dollars.

Most recently, it became internationally known as the U.S. Army Environmental Hygiene Agency (AEHA). Its mission expanded to support worldwide preventive medicine programs of the Army, DOD, and other Federal agencies as directed by the Army Medical Command or the Office of The Surgeon General, through consultations, support services, investigations, on-site visits, and training.

On 1 August 1994, AEHA was redesignated the U.S. Army Center for Health Promotion and Preventive Medicine with a provisional status and a commanding general officer. On 1 October 1995, the nonprovisional status was approved with a mission of providing preventive medicine and health promotion leadership, direction, and services for America's Army.

The organization's quest has always been one of excellence and the provision of quality service. Today, its goal is to be an established world-class center of excellence for achieving and maintaining a fit, healthy, and ready force. To achieve that end, the CHPPM holds firmly to its values which are steeped in rich military heritage:

- **★** Integrity is the foundation
 - ★ Excellence is the standard
 - ★ Customer satisfaction is the focus
 - ★ Its people are the most valued resource
 - ★ Continuous quality improvement is the pathway

This organization stands on the threshold of even greater challenges and responsibilities. It has been reorganized and reengineered to support the Army of the future. The CHPPM now has three direct support activities located in Fort Meade, Maryland; Fort McPherson, Georgia; and Fitzsimons Army Medical Center, Aurora, Colorado; to provide responsive regional health promotion and preventive medicine support across the U.S. There are also two CHPPM overseas commands in Landstuhl, Germany and Camp Zama, Japan who contribute to the success of CHPPM's increasing global mission. As CHPPM moves into the 21st Century, new programs relating to fitness, health promotion, wellness, and disease surveillance are being added. As always, CHPPM stands firm in its commitment to Army readiness. It is an organization proud of its fine history, yet equally excited about its challenging future.

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DEPARTMENT OF THE ARMY U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE 5158 BLACKHAWK ROAD ABERDEEN PROVING GROUND, MARYLAND 21010-5403

MCHB-TS-EHR

PYROTECHNICS HEALTH RISK ASSESSMENT NO. 39-EJ-1485-00 RESIDENTIAL EXPOSURE FROM INHALATION OF AIR EMISSIONS FROM THE M18 GREEN-COLORED SMOKE GRENADE

EXECUTIVE SUMMARY

This assessment evaluated the potential for human health effects to offsite residents breathing air emissions following use of the M18 Green-Colored Smoke Grenade (green-colored M18) during training exercises. The military uses pyrotechnics for signaling, obscuring, and illuminating during training and combat. Pyrotechnics are also used during training exercises to simulate battle conditions. Study results showed that no adverse health effects are expected, to the hypothetical resident, from inhalation of the air emissions from the green-colored M18.

To conduct this study, air emissions from the green-colored M18 were collected in a test chamber (Bang Box) at Dugway Proving Ground, Utah. The data collected from the Bang Box study provided the amount and types of substances released from the green-colored M18. This information was then used in an air dispersion model to determine ambient air concentrations at a location 100 meters (328 feet) downwind from a site where the green-colored M18 may be used. Since the training facility in this study is hypothetical, the air model used assumptions that provided conservative estimates of air concentrations.

Modeled air concentrations were combined with exposure information (e.g., number of exposures per year) to estimate the amount of each substance the hypothetical resident breathes. This intake was combined with the substance's health information, which was obtained from agencies such as the U.S. Environmental Protection Agency, to determine if there is a potential for health risks from inhalation of these substances.

The health risk study included both long-term (30 years) and short-term (15-minute or 1-hour) exposures to modeled substance concentrations. Study results showed that no adverse health effects are expected to be experienced, by the hypothetical resident, from inhalation of air emissions from the green-colored M18.

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LIST OF ACRONYMS

AEC U.S. Army Environmental Center

AEGL Acute Exposure Guideline Levels

AIHA American Industrial Hygiene Association

ATV Acute Toxicity Value

DOE U.S. Department of Energy

EPA U.S. Environmental Protection Agency

ERPG Emergency Response Planning Guidelines

HBSL Health-Based Screening Level

HCI Hydrogen Chloride

NAAQS National Ambient Air Quality Standards

NAC/AEGL National Advisory Committee for Acute Exposure Guideline Levels

NEW Net Explosive Weight

OEL Occupational Exposure Limit

PM₁₀ Particulate Matter under 10 micrometers in size

PRG Preliminary Remediation Goals

RBC Risk-Based Concentration

RfC Reference Concentration

TEEL Temporary Emergency Exposure Limits

TPHCWG Total Petroleum Hydrocarbon Criteria Working Group

TSP Total Suspended Particulates

USACHPPM U.S. Army Center for Health Promotion and Preventive Medicine

PYROTECHNICS HEALTH RISK ASSESSMENT NO. 39-EJ-1485-00 RESIDENTIAL EXPOSURE FROM INHALATION OF AIR EMISSIONS FROM THE M18 GREEN-COLORED SMOKE GRENADE

PURPOSE

This document presents the evaluation of the potential for adverse human health effects to offsite residents breathing air emissions following use of the M18 green-colored smoke grenade (green-colored M18) during training exercises.

2. AUTHORITY

Memorandum, U.S. Army Environmental Center, 4 June 1999, Subject: Pyrotechnics Risk Assessment.

3. REFERENCES

See Appendix A.

4. BACKGROUND

a. PYROTECHNICS AND THEIR USE

The term pyrotechnic is derived from the Greek words "pyr" and "techne" meaning fire and art. The terms pyrotechnics and fireworks are often used interchangeably. Examples of pyrotechnics include distress flares and fireworks used for commercial (public displays) and consumer use (e.g., sparklers). Every year, during New Year's Eve and Independence Day, fireworks are used for public displays across the country. For example, during the Year 2000 Independence Day celebration in New York City, 60,000 shells were launched during a firework display that lasted for 30 minutes.

The military uses pyrotechnics for four purposes: 1) as a method of communication through the use of signals, 2) to produce smoke to reduce enemy effectiveness, 3) for illuminating the field, and 4) to simulate battle conditions during training exercises. Pyrotechnics play an important role in both military training and combat. It is important that our troops are adequately trained to use them properly.

b. WHAT IS THE GREEN-COLORED M18?

The M18 smoke grenade is a type of pyrotechnic device used by troops for ground-to-ground or ground-to-air signaling (Reference 1). The M18 may be filled with one of four different smoke colors. These different colored smoke

signals can be seen over great distances when used against a terrain background of contrasting colors.

The green-colored M18 is 5.75 inches long, 2.50 inches in diameter, and weighs 19 ounces (Reference 2). The body of the green-colored M18 consists of a thin cylinder of sheet metal that is filled with a green smoke mixture and a starter mixture composed mostly of potassium nitrate.

c. USE OF THE GREEN-COLORED M18

The M18s are used during many Army training events. These events are held at nearly every Army training installation. At most locations, the training areas are at least 1000 meters (over half a mile) away from populated areas. In general, seven green-colored M18s are used during a day of training, which typically occurs five times per year.

The M18 contains a delay-igniting fuze so that smoke is not released immediately after the grenade is activated. This allows the soldier to throw the grenade, usually to a distance of approximately 35 meters (115 feet), before smoke is produced. The M18 will emit a cloud of colored smoke for 50 to 90 seconds. This colored smoke can be used for different purposes. For example, it can be used to mark friendly force locations for other ground troops. It can also be used to mark a landing zone during operations such as medical evacuation (Reference 3).

d. ASSESSMENT SUMMARY

The approach for this study consisted of two main portions: air dispersion modeling and exposure assessment. These are briefly discussed in the paragraphs below. Sections 5-7 present a more explicit discussion of the methodology used for this study.

Emissions data generated from the studies in the Bang Box at Dugway Proving Ground, Utah (Reference 4), were used with an atmospheric dispersion model to estimate the average concentrations that may be experienced by an offsite resident. Since this study is designed to provide results that would be applicable to most Army training facilities, the training area used in this evaluation was a hypothetical one. In addition, air-modeling parameters were selected to mimic worst-case conditions.

The exposure assessment included calculations of time-averaged concentrations for both long-term (chronic) and short-term (acute) exposures. For the purpose of this study, air concentrations were averaged over 30 years for chronic exposures and 1-hour or 15 minutes for acute exposures. These concentrations were compared to chronic health-based screening levels

(HBSLs) established by the U.S. Environmental Protection Agency (EPA) or acute toxicity values (ATVs) established by selected agencies depending on the exposure duration (i.e., 30 years versus 1-hour or 15 minutes). If the chronic or acute averaged concentrations (C_{chronic} and C_{acute}) were greater than these screening levels, further analysis would be warranted to determine the potential for health effects. It should be noted that concentrations greater than the screening levels do not indicate an onset of health effects, but rather the potential for such.

5. METHODS AND DATA COLLECTION

a. EMISSION FACTORS

Emission factors used to derive the air modeling emission rates used in this study were generated from the pyrotechnics emissions studies conducted in the Bang Box at Dugway Proving Ground, Utah (Reference 4). The Bang Box studies identified and quantified air emissions from the firing of training munitions. The data provided by the Bang Box studies included the net explosive weight (NEW) of the item, the compounds sampled, and compound-specific emission factors. Emissions data from the Bang Box studies are included in the first four columns of the air dispersion modeling output data in Appendix B.

b. AIR MODEL

(1) BACKGROUND

Air dispersion models are available to mathematically simulate plume behavior to estimate downwind concentrations of compounds emitted from various sources. However, specific models are not available to determine the dispersion of emissions from munitions used during training. Estimating the magnitude and location of these concentrations depends on many factors including the amount and type of emissions, the behavior of the source, and meteorological conditions. Since a specific model is not available for modeling the use of munitions during training, the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) evaluated numerous air models to determine which would be suitable for use with munitions used during training. The USACHPPM recommended using the Integrated PUFF (INPUFF) model to estimate the dispersion of emissions from sources such as pyrotechnics (Reference 5).

(2) MODEL DESCRIPTION

The INPUFF Model (Reference 6) was developed to simulate dispersion from instantaneous or semi-continuous point sources. This Gaussian-integrated puff model is capable of addressing a cloud type release over short periods of

time, and computations can be performed for a single point source for multiple receptors. The algorithms used to calculate concentrations assume a vertically uniformed wind direction (with no chemical reaction) to compute the contribution of each cloud at a receptor for each time step/interval.

(3) ASSUMPTIONS

Some assumptions were made to best represent the green-colored M18 in the air model. These assumptions were as follows:

(a) Initial cloud dimensions are preferred to model the air emissions from these types of releases. However, this information was not measured during the Bang Box studies; therefore, assumptions had to be made. Typically, with conventional point sources, the cloud rise and formation are determined by characterizing flue gas exit velocity, temperature, and stack diameter. However, for unconventional sources with no physical stack dimensions, such as the green-colored M18, the cloud temperature was set close to the ambient temperature, and a low exit velocity (0.1 meter per second) was used. Using a low exit velocity assumes essentially no cloud rise resulting in higher ground level concentrations to provide a more conservative estimate of air emissions. The source parameters used to model the green-colored M18 are included in Table 1.

TABLE 1: SOURCE PARAMETERS

Source/Stack Diameter	0.061 meters
Source/Stack Height	0.15 meters
Source Exit Temperature	298.15 degrees Kelvin (°K)(or 77 °F)
Exit Velocity	0.1 meters/second

(b) Since this study does not look at a specific training site, generic, worst-case meteorological data were used. To determine the worst-case meteorological conditions that would result in the highest air emission concentrations, an analysis was performed using the EPA Risk Management Program Guidance (Reference 7). This guidance includes tables for estimating the footprint of chemical releases and is intended to inform emergency responders of potential accidental releases. The EPA has defined most default conditions for meteorological modeling parameters. Table 2 lists the meteorological parameters that were used in the air model.

TABLE 2: WORST-CASE METEOROLOGICAL PARAMETERS

Wind Speed	1 meter/second
Atmospheric Stability	Category F
Wind Direction	270°
Ambient Temperature	293 degrees Kelvin (°K) (or 68 °F)

(c) For the purposes of this study, a hypothetical offsite resident was assumed to be located 100 meters directly downwind from the source. The meander of the cloud is a major factor when estimating concentrations at given locations downwind from the source. Assuming that the resident is directly downwind from the source is the same as assuming that there is no cloud meander and therefore the cloud remains more concentrated. This assumption provides the most conservative modeled concentrations.

(4) GENERAL METHODOLOGY

- (a) For the green-colored M18, the highest modeled concentrations were seen at the 100-meter location. This means that concentrations at distances greater than 100 meters were lower. This location was used in the exposure evaluation to provide the most conservative estimates of air emissions that offsite residents may be exposed.
- (b) The model was run for a total calculation time of 900 seconds (15 minutes) to ensure that the total mass of the cloud had passed the receptor locations and to acquire 15-minute average concentrations for use in the exposure evaluation. Concentrations were calculated every two seconds. The model indicated that the initial cloud reached the hypothetical offsite resident within 80 seconds and dissipated below the lowest concentration the model calculated, which in this instance (1 x 10⁻¹⁰ g/m³) occurred within 240 seconds. Table 3 contains the air model input parameters used in this study.

TABLE 3: AIR MODEL INPUT PARAMETERS

Number of meteorological periods (NTIME)	1
Duration of each meteorological period (ITIME)	900 seconds
Number of updates to the source (NSRCDS)	15
Duration/time step between each source update (ISUPDT)	60 seconds
Total time modeled/Simulation Period (NTIME) (ITIME)= (NSRCDS) (ISUPDT)	900 seconds

(5) USE OF MODEL OUTPUT

The concentrations provided by the INPUFF model were based on a unit emission rate of 1 gram/second from an emission source and did not represent any pollutant-specific concentrations from the use of pyrotechnics. This unit emission rate is typically used for ease of modeling purposes. The relationship between the emission rate and predicted concentration is linear. Therefore, the ratio of the predicted concentration to the unit emission rate was multiplied by each pollutant-specific emission rate to provide pollutant-specific concentrations.

(6) DETERMINATION OF POLLUTANT-SPECIFIC EMISSION RATES

(a) The actual pollutant emission rate per item (ER₁) for each pollutant was calculated using the following equation:

$$ER_1 = \frac{M \cdot CV}{t}$$
 Equation 1

where:

 ER_1 = emission rate for one item (g/(item*sec))

M = total mass (lb) of pollutant emitted per item (lb/item)

CV = conversion factor (453.59 g/lb)

t = release duration in seconds as obtained from the training manual (References 2, 8)

Example 1 Sample Calculation Using Equation 1:

$$ER_1 = \frac{(1.265 E - 01)(453.59)}{(120)}$$

= 4.780E-01 g/(s*item)

Calculation provided for total suspended particulates (TSP). Averaged adjusted emission factor of TSP in lb/item was obtained from Appendix B.

(c) Pollutant-specific ambient concentrations for one item (CONC) were calculated using the following equation:

$$CONC = ER_{EV} \cdot \frac{UC}{ER_{unit}}$$
 Equation 2

where:

CONC = pollutant concentration based on one item (g/m³)

 ER_1 = emission rate for one item (g/s)

 ER_{unit} = unit emission rate as used in the model (g/sec)

UC = concentration based on the unit emission rate (g/m³)

Example 2
Sample Calculation Using Equation 2:

$$CONC = (4.780E - 01) \frac{(3.510E - 03)}{(1)}$$

 $= 1.678E-03 g/m^3$

Calculation provided for TSP.

c. EXPOSURE ASSESSMENT

(1) EXPOSURE ASSUMPTIONS

(a) Exposure assumptions were selected using a typical use scenario for the green-colored M18. This use scenario was provided by the U.S. Army Environmental Center (AEC), and is based on consultation with their senior training advisor (References 9, 10). This information is included below in Table 4 and is used for the chronic and acute exposure evaluations.

TABLE 4: FREQUENCY OF USE FOR THE GREEN-COLORED M18

Parameter	Value Used
Number of items used per training scenario	7
Number of items used per training event	2-3
Number of events per scenario	3
Time between events	8 hours
Number of scenarios per year	5

(b) The frequency of use for the green-colored M18 was required to determine how much substance an offsite resident would be exposed to in the time period of interest (i.e., acute or chronic exposure). For the purposes of this study, a training scenario is defined as a day or session of training whereas a training event is defined as a single use of pyrotechnics. A training scenario may consist of multiple training events. An event may consist of the use of two to three items (not to exceed a maximum estimated use of seven items per scenario).

(2) TIME-AVERAGING

- (a) For the chronic assessment, time-averaged concentrations were calculated using the EPA's default residential exposure duration of 30 years (this value assumes that the resident spends 30 years at the same residence). This was done to derive concentrations that would be consistent with the exposure duration used by the EPA so that estimated substance concentrations could be compared to their respective health-based screening levels.
- (b) In this evaluation, training scenarios were assumed to occur five times a year (References 9, 10). Using the default residence time established by the EPA, the assumption was made that someone could be exposed to five training scenarios per year for 30 years. Table 5 lists the exposure parameters used to estimate concentrations for the chronic assessment. These parameters are based on the typical use scenario provided by AEC (Table 4) and the assumptions used in the air model run.

TABLE 5: EXPOSURE PARAMETERS USED TO DETERMINE TIME-AVERAGED CHRONIC AIR CONCENTRATIONS

Value Used
15 minutes/item ¹
7 items/day ²
5 days/year ²
30 years ³

Based on the total model time of 900 seconds (15 minutes) used in the air model run.

(c) The daily averaged concentrations were calculated using Equation 3. To continue with the examples used previously (Examples 1 and 2), TSP is used to illustrate how this equation is applied. It should be noted that the

²From Table 4.

³EPA default value.

average modeled concentration was converted from g/m³ to µg/m³ before it was used in Equation 3.

$$C_d = \frac{CONC \cdot ET \cdot EF_{day}}{1440}$$
 Equation 3

where:

 C_d = average daily concentration (μ g/m³)

CONC = average modeled concentration for one item (µg/m³)

ET = exposure time (minutes/item) EF_{day} = exposure frequency (items/day)

1440 = unit conversion from minutes to day

Example 3 Sample Calculation Using Equation 3:

$$C_{d(TSP)} = \frac{(1.678E - 03)(15)(7)}{1440}$$
$$= 1.224E + 02 \,\mu\text{g/m}^3$$

The averaged modeled concentration (CONC) for TSP was obtained from Appendix B. The exposure parameters were obtained from Table 5.

(d) Chronic averaged concentrations were calculated using Equation 4. The resulting concentration (C_d) from Equation 3 was used in Equation 4 to determine the averaged chronic concentrations. Example 4 shows how this calculation was performed.

$$C_{chronic} = \frac{C_d \cdot EF_{year} \cdot ED}{AT}$$
 Equation 4

where:

 $C_{chronic}$ = average chronic concentration (µg/m³) C_d = average daily concentration (µg/m³) EF_{vear} = exposure frequency (days/year)

ED = exposure duration (years)

AT = averaging time (days) (for carcinogenic endpoint, AT = 70 years x 365 days; noncarcinogenic endpoint, AT = ED x 365 days)

Example 4 Sample Calculation Using Equation 4:

$$C_{chronic(TSP)} = \frac{(1.224E + 02)(5)(30)}{(30)(365)}$$
$$= 1.68E + 00 \,\mu\text{g/m}^3$$

The average daily concentration was calculated as shown in Example 3. The exposure parameters were obtained from Table 5.

- (e) Unlike the chronic evaluation, guidance for evaluating acute exposures is not currently available. Due to the nature of the use of pyrotechnics, acute exposures cannot be overlooked. For the purpose of this study, acute exposure is defined as a 1-hour or 15-minute exposure. The 1-hour or 15minute acute exposure averaging times allow for comparison with guidelines developed specifically for emergency planning purposes (see discussion on acute toxicity below).
- (f) The exposure frequency is based on the number of events per 1-hour or 15 minutes depending on the guideline used for comparison. This information is based on the use scenario provided by AEC (Table 4). To determine the maximum number of items that may be used in 1-hour, it was conservatively assumed that three green-colored M18s might be activated all at once during an event. This assumption is based on the fact that two to three items may be used within an 8-hour period (one event). The average acute concentrations were computed using Equation 5. Example 5 contains a sample calculation of this equation. Since TSP does not have an acute toxicity value, hydrogen chloride (HCI) is used as the example compound.

$$C_{acute} = \frac{CONC \cdot ET \cdot EF_{hour}}{60}$$
 Equation 5

where:

 C_{acute} = average acute concentration ($\mu g/m^3$)

CONC = average modeled concentration for one item (µg/m³)

ET = exposure time (minutes/item) EF_{hour} = exposure frequency (items/hour) = unit conversion, 60 minutes/hour

Example 5 Sample Calculation Using Equation 5:

$$C_{acute(HCI)} = \frac{(7.498E - 03)(3)(15)(1/0.25)}{60}$$
$$= 2.25E-2 \,\mu\text{g/m}^3$$

The average modeled concentration (CONC) for HCl was obtained from Appendix B. Since the acute toxicity value for HCl is based on a 15-minute exposure duration (TEEL), the acute concentration was averaged over 15 minutes (0.25 hours) so that C_{acute} can be compared with its toxicity value.

d. TOXICITY ASSESSMENT

The potential for adverse health effects was determined by comparing timeaveraged air concentrations to health-based screening levels, which are developed from a substance's known toxicity. These toxicity values typically include different levels of safety factors depending on the level of confidence of the critical study. Appendix C contains a table of screening values used for the chronic and acute evaluations.

(1) CHRONIC ASSESSMENT

- (a) The chronic assessment was evaluated using a screening approach. Using this method, a substance's estimated time-averaged air concentration was compared to its HBSL. If this ratio was less than one, no further analysis was required. This approach is conservative because the exposure assumptions used by the EPA, to establish HBSLs, assume that the resident is exposed for 350 days per year (assuming 2 weeks vacation per year). Since the training scenarios, in which the green-colored M18 is used, are not expected to exceed five days per year, HBSLs specific to this study (if they were developed) would likely be higher.
- (b) The HBSLs were obtained from the EPA, primarily from Region 3 and Region 9 (References 11, 12). To ensure that the most recent information was used, the Internet sites of both regions were checked. Although the general approach used by both Region 3 and Region 9 is the same, the exposure assumptions differ enough so that final recommended screening levels can vary to a certain degree. In both methods a substance's HBSL is selected using the toxicity endpoint that derives a lower concentration. For example, if a substance has a known systemic toxicity and is a carcinogen, concentrations were calculated using both toxicity values. To maintain a

conservative approach, the lower concentration was selected as the recommended screening level.

- (c) A hierarchy was developed in order to quantitatively evaluate for as many of the identified substances as possible. Since the methodology used by Region 9 results in lower HBSLs than Region 3, the Region 9 preliminary remediation goals (PRGs) were used first. Region 3's risk-based concentrations (RBCs) were only used when a PRG was not available. The only exception was for chromium (VI) [Cr (VI)] where Region 9 used a carcinogenic toxicity value that was seven times greater than the EPA's recommended value to develop its screening level for inhalation exposure (Reference 13). Since the EPA does not advocate the application of this multiplication factor, the RBC for Cr (VI) was used instead of the PRG.
- (d) Some substances have neither PRGs nor RBCs because they have their own set of regulatory standards. Under the Clean Air Act, the EPA is required to establish National Ambient Air Quality Standards (NAAQS) (Reference 14) for several substances considered harmful to public health and the environment. Currently, NAAQS are available for six substances, of which carbon monoxide, nitrogen dioxide, lead, sulfur dioxide, and particulate matter < 10 micrometers (PM₁₀) have been detected in the green-colored M18 Bang Box study. The NAAQS for the longer averaging time were used for the chronic evaluation. Depending on the substance, this can range from an 8-hour average to an annual average. In addition, since the majority of the measured TSP were PM₁₀ (Reference 4), the NAAQS for PM₁₀ was used to evaluate the potential for health effects from exposure to TSP. Example 6 shows a sample calculation of how a substance's estimated chronic concentration is compared to its HBSL.

Example 6
Sample Calculation Comparing a Substance's Estimated Chronic Concentration to Its HBSL:

$$\frac{C_{chronic(TSP)}}{HBSL} = \frac{1.68E + 00}{50}$$
$$= 3.36E-02 < 1$$

In this case, the resulting ratio is two orders of magnitude less than one, indicating further evaluation is not necessary.

(e) Many petroleum hydrocarbons were detected but do not have specific screening levels. Therefore, the approach recommended by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG) (Reference 15)

was adopted to evaluate petroleum hydrocarbon mixtures. Based on the working group's assessment of various hydrocarbons, it was recommended that mixtures be separated according to a substance's number of carbons and its chemical class (i.e., aliphatic or aromatic¹). Generally, as a substance's carbon number increases, its molecular weight increases and it is therefore, not a substance of concern via inhalation. The working group also concluded that aromatic hydrocarbons tend to be more toxic than aliphatic hydrocarbons (Reference 15).

(f) Table 6 tabulates the inhalation toxicity values used to evaluate exposure to petroleum mixtures. To be consistent with the methodology used in this study, the reference concentrations (RfCs) were converted to PRGs using Region 9 assumptions. The resulting PRGs are included in Table D-4 in Appendix D.

TABLE 6: SUMMARY OF RfCs USED FOR PETROLEUM HYDROCARBONS¹

Carbon Range	Aromatic Inhalation RfC (mg/m³)	Aliphatic Inhalation RfC (mg/m³)
C ₅ – C ₆ C _{>6} – C ₈		18.4
C>7 - C8	0.4	
$C_{>8} - C_{10}$ $C_{>10} - C_{12}$ $C_{>12} - C_{16}$	0.2	1.0
$C_{>16} - C_{21}$ $C_{>21} - C_{35}$	NA	NA

Reference 15

NA = not applicable for high molecular weight TPHs ($C_{>16}$) because compounds in this carbon range are not volatile and therefore, inhalation is not a pathway of concern.

(2) ACUTE ASSESSMENT

(a) As previously indicated, an acceptable method for assessing acute health effects is not currently available. It was not until recently that EPA guidance addressed the need to evaluate acute health effects from inhalation (Reference 17). Even then, acute toxicity data for risk assessment purposes were not readily available. The EPA recognized this deficiency and spearheaded the National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances (NAC/AEGL Committee). Currently,

¹ Aliphatic hydrocarbons are hydrocarbons in which the carbon atoms are joined by single covalent bonds consisting of two shared electrons (e.g., butane). Aromatic hydrocarbons have ring structures (e.g., benzene) (Reference 16).

AEGLs are available for only a handful of substances, of which only three are found in the list of compounds from the green-colored M18 emissions data.

- (b) To circumvent this problem, several state regulatory agencies have suggested that guidelines developed for emergency purposes be used in the interim. Although suggestions have been made to use occupational exposure limits (OELs) by applying additional safety factors (References 18, 19), OELs were not used in this study because they introduce even more uncertainty than the use of emergency guidelines. The OELs are designed to protect the workplace environment and assume 8 hours a day, 5 days a week exposures. By definition, these exposures are more chronic than acute.
- (c) In comparison, emergency planning guidelines are more appropriate because they are typically developed for exposures of 1-hour or less. In addition, safety factors may also have been included depending on the agency that develops these guidelines, so that the values would be protective of the general population.
- (d) Emergency Response Planning Guidelines (ERPGs) published by the American Industrial Hygiene Association (AIHA) (Reference 20) and the Temporary Emergency Exposure Limits (TEELs) developed by the U.S. Department of Energy (DOE) (Reference 21) were used for this study, specifically the ERPG-1s and the TEEL-1s (with the exception of the three AEGLs that were available). Since TEEL-1s are intended for 15-minute exposures, air concentrations compared to TEELs were averaged over a 15minute period. Air concentrations compared to ERPGs and AEGLs were averaged over 1-hour, as these values were developed for 1-hour exposures.
- (e) The AIHA defines ERPG-1 as follows:

"The maximum concentration in air below which it is believed nearly all individuals could be exposed for up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor."

The DOE defines TEEL-1 as follows:

"The maximum concentration in air below which it is believed nearly all individuals could be exposed without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor."

(f) For this study, AEGLs were used first when available since they are developed specifically for the purposes of acute exposure evaluations. ERPGs were selected next, prior to a substance's TEEL, because they are vigorously reviewed before they are published whereas the TEELs are not. Example 7 shows a sample calculation of how a substance's estimated acute concentration is compared to its acute toxicity value.

Example 7

Sample Calculation of Comparing a Substance's Estimated Acute Concentration to Its Acute Toxicity Value:

$$\frac{C_{acute(HCI)}}{ATV} = \frac{2.25E - 02}{4.47E + 03}$$
$$= 5.03E - 06 < 1$$

In this example with HCI, the ratio is six orders of magnitude below 1, indicating that further analysis is not necessary.

6. RISK CHARACTERIZATION

Appendix D presents results from the green-colored M18 risk characterization. Note that for some substances, two concentrations were reported because of different analytical test methods (as noted in bold). In those instances, the higher concentration was used.

a. CHRONIC HEALTH RISK

The outcome indicated that no chronic health risks are expected from breathing the air emissions from the green-colored M18. Since all ratios were below one, no further evaluation was needed.

b. ACUTE HEALTH RISK

For the acute analysis, all ratios were below one, indicating that no acute health impacts are expected from breathing the air emissions from the green-colored M18. Since all ratios for the acute evaluation were below one, no further assessment was needed.

c. FACT SHEET

A copy of the fact sheet submitted to AEC is included as Appendix E. The fact sheet uses the results from this study to address health concerns related to inhalation of green-colored M18 air emissions.

7. UNCERTAINTY DISCUSSION

The limitations inherent in modeling and the added conservatism of the evaluation contribute to the uncertainty of the study results. The risk assessment methodology typically includes safety factors that are embedded in the toxicity data to ensure adequate protection of the general population, particularly, susceptible individuals such as the sick, elderly, and children. Table 7 identifies areas of uncertainty associated with this assessment.

TABLE 7: TYPES OF UNCERTAINTY

Issue	Uncertainty	Direction of Effect
	Modeling	
Modeled versus real- time sampling	The air concentrations in this study were modeled. Actual air concentrations taken from the field may be higher or lower.	Varies
Frequency of use for the green-colored M18	Actual frequency of use of green-colored M18s during a training event may be different from those stated in this report.	Varies
Hypothetical resident assumed to be located directly downwind	Unless the area around the training facility is populated, the chances that a person living directly downwind is low.	Overestimates
Use of worst-case meteorological conditions	To ensure that this study is applicable to most training areas, worst-case meteorological conditions were used in the air model.	Overestimates
	Exposure Assessment	
Estimating time- averaged concentrations	Actual exposure from the green-colored M18 is intermittent. If one were to plot a person's exposure profile, the plot would consist of a series of spikes. Since current risk assessment methodology does not allow the evaluation of the potential for health risks as a function of time, a single concentration, averaged over the exposure duration was used. In this study, the exposure durations used were 30 years and 1-hour or 15 minutes.	Varies
Chromium speciation	All chromium was assumed to be present as Cr(VI), which is more toxic than Cr(III).	Overestimates

TABLE 7: TYPES OF UNCERTAINTY

Issue	Uncertainty	Direction of Effect
Comparing estimated concentration to established screening levels	The Region 3 and Region 9 HBSLs were developed using different exposure assumptions than those in this study, resulting in more conservative screening levels.	Overestimates
Screening assessment versus calculating an average daily intake	Calculating an average daily intake allows the use of scenario-specific assumptions. However, unless the ratio of concentration to screening level approaches one, a screening assessment is useful as a first-cut evaluation.	Varies
Exposure to other munitions	Other munitions are typically used during the same training event. These items may contain similar or different substances from those detected in the green-colored M18.	Underestimates
	Toxicity Assessment	
Lack of toxicity data	Some substances were not quantitatively evaluated because they have no known toxicity data.	Underestimates
Modifying and uncertainty factors for toxicity data	Modifying factors and uncertainty factors of varying degree are typically applied to toxicological values. These factors are used to conservatively account for extrapolating from animal studies for human health evaluation, and to conservatively account for variation in human populations.	Overestimates

8. CONCLUSION

Results indicated that residents who live as close as 100 meters directly downwind from training areas are safe from breathing air emissions from the green-colored M18. It is believed that the assumptions contained in this analysis are conservative enough to be protective of all the population including the sick, elderly, and children.

9. RECOMMENDATIONS

Since the results from this study are intended for a hypothetical training facility, they can vary depending on site-specific conditions. However, because of the conservative assumptions used (e.g., worst-case meteorological conditions, receptor located directly downwind, etc.) it is believed that most site-specific analyses would result in even lower concentrations. Therefore, the results from this evaluation should be applicable to most training facilities unless site-specific conditions vary significantly.

10. POINT OF CONTACT

Questions about this report should be directed to Ms. Joleen Mobley at (800) 222-9698 (ext 2953) or (410) 436-2953.

PREPARED BY:

JOLEEN MOBLEY
Environmental Scientist

ATSDR Program

STAFFORD D.F.R. COAKLEY

Heen Mobley

Environmental Engineer

Environmental Health Risk Assessment and Risk Communication Program

APPROVED BY:

KATHLEEN-M. BUCHI

DOD Lead Agent for the

ATSDR Program

DAVID L. DAUGHDRILL

Program Manager

Environmental Health Risk Assessment

and Risk Communication

APPENDIX A
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APPENDIX B AIR DISPERSION MODELING OUTPUT DATA

Table B-1: Air Modeling Output Data for Metals, Particulates, and Miscellaneous Compounds

3.51E-03 3.51E-03 4Modeled double for fem (m³) 1.05 1.09								
Compound Concentration of Concentration of Concentration of Concentration of Concentration of Concentration of Concentration (mg/m²) Measured Actual Background Concentration (mg/m²) Concentr			GIBBII SIIIOK	e Grenade		Number of Items (I):	1	item
Maesured Actual General Background Maesured Actual Background Maesured Actual Background Adjusted Adjusted Concentration Concent			NEW, Ib	= 0.72		Release duration (t):	120	seconds
Compound (mg/m²) Measured Actual Background Concentration (mg/m²) Average Average Average Average (a) (a) (a) (a) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b			Number of I	tems = 1		Unit Concentration (UC):	3.51E-03	a/m³
1.00 1.00	Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (b/lb NEW)	Average Adjusted Emission Factor (ib/item)	Total Mass of Pollutant Emitted Per Item (grams)	Average Modeled Concentration for One Item (grams/m³)	
2.557E+03 5.125E-01 1.756E-01 1.265E-01 5.736E+01 1.679E-03	Particulate							
Furan 2.741E-02 1.587E-02 7.848E-07 5.650E-07 2.563E-04 7.496E-09	TSP	2.557E+03	5.125E-01	1.756E-01	1,265E-01	5.736E+01	1.678E-03	4.780E-01
Furan 6.823E-02 3.673E-02 2.110E-06 1.510E-06 6.892E-04 7.498E-09 1.502E-04 2.016E-09 1.502E-04 1.502E-05 1.502E-05 1.502E-04 1.502E-05 1.502E-04 1.502E-05 1.502E-05 1.502E-04 1.502E-05 1.502E-0								
1.2741E-02	HCI/CI ₂							
Furan 6.823E-02 3.673E-02 2.10E-06 1.519E-06 6.892E-04 2.016E-09	HCI (a)	2.741E-02	1.587E-02	7.848E-07	5.650E-07	2.563E-04	7.498E-09	2.136E-06
Furan Fura	Cl2 (a)	6.823E-02	3.673E-02	2.110E-06	1.519E-06	6.892E-04	2.016E-08	5.743E-06
Fluran F								
TEQ (c) 2.631E-07 ND 1.807E-11 1.301E-11 5.903E-09 1.727E-13 1.801E-01 1.801E-02 3.960E-01 1.641E-02 1.181E-02 5.358E+00 1.567E-04 1	Dioxin/Furan							
ystem Allonoxide (CO) 2.371E+02 3.960E-01 1.61E-02 1.181E-02 5.366E+00 1.567E-04 nn Oxide (NOx) 2.354E+00 3.827E-02 1.608E-04 1.156E-04 5.245E-02 1.534E-06 nn Oxide (NOx) 2.384E+00 3.827E-02 1.608E-04 1.156E-04 5.245E-02 1.534E-06 1 Dioxide (SO2) 2.385E+03 7.001E+02 1.186E-01 1.086E-02 3.618E-01 1.068E-05 Dioxide (SO2) 2.385E+03 7.001E+02 1.186E-01 1.109E-02 3.618E-01 1.177E-03 Dioxide (SO2) 3.329E+00 4.473E-03 1.274E-04 1.637E-02 3.618E-01 1.177E-03 Um ND NM(b) 1.255E-04 1.637E-02 3.618E-03 1.172E-06 nn ND NM(b) 1.255E-04 1.637E-02 1.199E-02 2.172E-06 nn ND NM(b) NM(b) 1.66E-04 1.63E-02 2.172E-06 nn ND NM(b) NM(b) 1.762E-04 1.68E-02 2.172E-03	Dloxin TEQ (c)	2.631E-07	QN	1.807E-11	1.301E-11	5.903E-09	1.727E-13	4.919E-11
yysem Jysem 1,641E-02 1,641E-02 5,358E+00 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-02 1,567E-04 1,567E-04 1,567E-02 1,567E-04 1,567E-04 1,567E-04 1,567E-04 1,567E-07 1,567E-04 1,567E-02 1,567E-07 1,567E-04 1,567E-02 1,567E-07 1,567E-04 1,567E-04 1,567E-02 1,567E-07 1,567E-04 1,567E-02 3,547E-05 1,672E-05 1,687E-07 1,177E-03 1,177E								
Namowide (CO) 2.37E+02 3.90E-01 1.61E-02 1.181E-02 5.36E+00 1.65FE-04 1.60FE-04 1.60FE-02 1.60FE-05 1.10FE-03 1.60FE-04 1.60FE-02 1.60FE-05 1.10FE-03 1.60FE-04 1.60FE-02 1.10FE-03 1.60FE-04 1.60FE-02 1.10FE-03 1.60FE-04 1.60FE-04 1.60FE-04 1.60FE-05 1.60	CEM System							
Name	Carbon Monoxide (CO)	2.371E+02	3.960E-01	1.641E-02	1.181E-02	5.358E+00	1.567E-04	4,465E-02
1 EAFTE-01 1.18E-03 8.049E-04 3.651E-01 1.068E-05 1 Dioxide (CO2) 2.385E+03 7.001E+02 1.169E-01 8.42E-02 3.819E+01 1.117E-03 Dioxide (SO2) 3.329E+00 4.473E-03 2.274E-04 1.637E-04 7.426E-02 2.172E-06 Jiate-phase Metals 1.326E+00 NM (b) 1.255E-04 9.039E-05 4.100E-02 1.195E-06 Inm ND NM (b) 1.255E-04 9.039E-05 4.100E-02 1.195E-06 Inm ND NM (b) ND ND ND ND Inm ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.338E-08 Inm ND NM NM (b) 2.447E-06 1.762E-06 7.993E-04 2.388E-09 Inm ND NM (b) 2.028E-05 1.460E-05 6.623E-03 1.997E-07 Inm ND NM (b) 2.028E-05 1.460E-05 6.632E-03 1.910E-05 Inm ND NM (b) 2.028E-05	Nitrogen Oxide (NOx)	2.354E+00	3.827E-02	1.606E-04	1.156E-04	5.245E-02	1.534E-06	4.371E-04
Dioxide (CO2) 2.385E+03 7.001E+02 1.169E-01 8.420E-02 3.819E+01 1.117E-03 1.117E-03 1.117E-03 1.117E-04 1.117E-04 1.117E-05	HCI (a)	1.667E+01	-1.947E-01	1.118E-03	8.049E-04	3.651E-01	1,068E-05	3.042E-03
Name	Carbon Dioxide (CO2)	2.385E+03	7.001E+02	1.169E-01	8.420E-02	3.819E+01	1.117E-03	3.183E-01
um 1.255E-04 9.039E-05 4.100E-02 1.199E-06 um ND NM (b) 1.255E-04 9.039E-05 4.100E-02 1.199E-06 ny ND NM ND ND ND ND ny ND NM 1.255E-04 9.039E-05 1.199E-06 1.199E-06 ny ND NM ND ND ND ND ND nm ND NM 1.247E-06 1.762E-06 7.993E-04 2.338E-08 nm ND NM ND ND ND ND ND nm ND NM ND ND ND ND ND nm ND ND ND ND ND ND 1.937E-07 sium 1.001E-01 NM (b) 2.026E-07 9.190E-05 2.688E-09 2.688E-09 sium 1.001E-02 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 sium 1.000E-	Sulfur Dioxide (SO2)	3.329E+00	4.473E-03	2.274E-04	1.637E-04	7.426E-02	2.172E-06	6.189E-04
um 1.826E+00 NM (b) 1.255E-04 9.039E-05 4.100E-02 1.199E-06 ny ND ND ND ND ND ND ny ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.338E-08 m ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.338E-08 m ND NM (b) NM (b) ND ND ND um ND NM (b) 2.028E-05 1.460E-05 0.190E-05 1.90E-05 um 3.016E-01 NM (b) 2.028E-05 1.460E-05 0.190E-05 1.90E-05 um A.150E-03 NM (b) 1.786E-05 3.400E-05 5.68E-07 9.190E-05 sium 1.001E+00 NM (b) 4.722E-05 3.400E-05 4.51E-02 6.51E-07 sium 1.000E-01 NM (b) 7.303E-06 2.287E-02 6.515E-07 sium 1.000E-01 NM (b) 7.303E-06 2.385E-03 6.515E-07								
Um 1.826E+00 NM (b) 1.255E-04 9.039E-05 4.100E-02 1.199E-06 ny ND ND ND ND ND ND xy ND ND ND ND ND ND xy ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.336E-08 m ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.336E-08 m ND NM (b) ND ND ND ND m ND NM (b) 2.028E-05 1.460E-05 6.623E-03 1.937E-07 um 3.016E-01 NM (b) 2.814E-07 2.026E-07 9.190E-05 2.688E-09 x 2.667E-02 NM (b) 1.786E-06 1.286E-06 5.834E-02 4.511E-07 x 8.866E-01 NM (b) 2.472E-05 3.400E-05 2.227E-02 6.515E-07 x 1.060E-01 NM (b) 7.303E-05 2.285E-06 3.317E-02 6.977E-05 <t< td=""><td>Particulate-phase Metals</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Particulate-phase Metals							
ny ND ND ND ND ND ND 1 ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.338E-08 1 ND NM (b) 2.447E-06 1.762E-06 7.993E-04 2.338E-08 1 ND ND ND ND ND ND 1 ND NM (b) 2.028E-05 1.460E-05 6.623E-03 1.937E-07 1 NM NM (b) 2.028E-05 1.460E-05 6.623E-03 1.937E-07 1 2.667E-02 NM (b) 2.814E-07 2.026E-07 9.190E-05 2.688E-09 1 2.667E-02 NM (b) 1.786E-06 1.286E-06 5.834E-04 1.707E-08 1 6.866E-01 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 1 1.001E+00 NM (b) 7.303E-06 2.285E-02 6.515E-07 6.515E-07 1 1.512E-01 NM (b) 7.312E-06 3.317E-03 6.977E-03	Aluminum	1,826E+00	NM (b)	1.255E-04	9.039E-05	4.100E-02	1.199E-06	3.417E-04
ND	Antimony	Q	NM (b)	Q	Q	QN	QN	QN
Image: Line of the color of the co	Arsenic	QN	(p) MN	Q	2	ΩN	QQ	SP
Image: Line of the color of the co	Barium	3.547E-02	(a) WN	2.447E-06	1.762E-06	7.993E-04	2.338E-08	6.661E-06
Imm ND	Beryllum	QN :	NM (b)	Q	Q	QN.	QN	QN
um 3.016E-01 NM (b) 2.028E-05 1.460E-05 6.623E-03 1.937E-07 4.150E-03 NM (b) 2.814E-07 2.026E-07 9.190E-05 2.688E-09 2.667E-02 NM (b) 1.786E-06 1.286E-06 5.834E-04 1.707E-08 slum 1.001E+00 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 nese 1.060E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 norus ND ND ND ND ND	Cadmium	Q	NM (b)	Q	Q	QN	QN	QN
4.150E-03 NM (b) 2.814E-07 2.026E-07 9.190E-05 2.688E-09 2.688E-09 2.667E-02 NM (b) 1.786E-06 1.286E-06 5.834E-04 1.707E-08 1.707E-08 sium 1.001E+00 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 1.512E-07 nese 1.060E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 1.512E-01 NM (b) 1.016E-05 7.312E-06 3.317E-03 9.703E-08 norus ND ND ND ND	Chromium	3.016E-01	NM (b)	2.028E-05	1.460E-05	6.623E-03	1.937E-07	5.519E-05
2.667E-02 NM (b) 1.786E-06 1.286E-06 5.834E-04 1.707E-08 flum 6.866E-01 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 flum 1.001E+00 NM (b) 6.819E-05 4.910E-05 2.227E-02 6.515E-07 flese 1.060E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 flese 1.512E-01 NM (b) 1.016E-05 7.312E-06 3.317E-03 9.703E-08 orus ND ND ND ND ND	Cobalt	4.150E-03	NM (b)	2.814E-07	2.026E-07	9.190E-05	2.688E-09	7.658E-07
situm 6.866E-01 NM (b) 4.722E-05 3.400E-05 1.542E-02 4.511E-07 situm 1.001E+00 NM (b) 6.819E-05 4.910E-05 2.227E-02 6.515E-07 sinese 1.060E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 horus ND ND ND ND ND	Copper	2.667E-02	NM (b)	1.786E-06	1.286E-06	5.834E-04	1.707E-08	4.861E-06
situm 1.001E+00 NM (b) 6.819E-05 4.910E-05 2.227E-02 6.515E-07 (c) 1.000E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 (c) 1.512E-01 NM (b) 1.016E-05 7.312E-06 3.317E-03 9.703E-08 (c) 1.010E-05 ND ND ND ND	Lead	6.866E-01	NM (b)	4.722E-05	3.400E-05	1.542E-02	4.511E-07	1,285E-04
nese 1.060E-01 NM (b) 7.303E-06 5.258E-06 2.385E-03 6.977E-08 6.977E-08 7.312E-01 NM (b) 1.016E-05 7.312E-06 3.317E-03 9.703E-08 Phorus ND ND ND ND	Magnesium	1.001E+00	NM (b)	6.819E-05	4.910E-05	2.227E-02	6.515E-07	1.856E-04
1.512E-01 NM (b) 1.016E-05 7.312E-06 3.317E-03 9.703E-08 horus ND ND ND ND	Manganese	1.060E-01	NM (b)	7.303E-06	5.258E-06	2.385E-03	6.977E-08	1.988E-05
QN QN QN (q) WN QN	Nickel	1.512E-01	NM (b)	1.016E-05	7.312E-06	3,317E-03	9.703E-08	2.764E-05
	Phosphorus	QQ.	NM (b)	2	Q	QN	S	Q

Table B-1: Air Modeling Output Data for Metals, Particulates, and Miscellaneous Compounds

		Green Smoke Grenade	e Grenade		Number of Items (I):		item
		NEW. Ib = 0.72	= 0.72		Poloses duration (t)		
					ולפוסמס טעומווטון (ו).	120	170 seconds
		Number of Items = 1	tems = 1		Unit Concentration (UC):	3.51E-03 0/m3	n/m ³
Compound	Measured Actual Concentration (mg/m³)	Measured: Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (Ib/Item)	Total Mass of Pollutant Emitted Per Item (grams)	Average Modeled Concentration for One Item (grams/m³)	Emission Rate for One Item (g/sec) ER,
Selenlum	QN	NM (b)	N	9	CN	CZ	Civ
Silver	5.556E-03	NM (b)	3.721E-07	2.679E-07	1.215E-04	3.555E-09	1.013E-06
I hallium	Q	NM (b)	QN	QN	QN	QN	CN
Zinc	1.700E-02	NM (b)	1.176E-06	8.467E-07	3.840E-04	1.123E-08	3.200E-06
Mercury	8.925E-05	NM (b)	6.129E-09	4.413E-09	2.002E-06	5.856E-11	1.668E-08
Footnotes:							

ND = Not Detected

NEW = Net Explosive Weight

NM = Not Measureable

CEM = Continuous Emissions Monitoring

(a) HCI/Cl₂ levels were too low to be reliably measured (except for White Smoke)

(b) Insufficient material to analyze.

(c) Presence questionable - reported at similar levels in samples and blanks.

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

		Green Smo	Green Smoke Grenade		Number of Items (I)		Hom
		NEW, II	NEW, Ib = 0.72		Release duration (t):		120 seconds
		Number of Items =	Items = 1		Unit Concentration (UC):	3.516	g/m²
Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (lb/ltem)	Total Mass of Pollutant Emitted Per Item (grams)	Ave Moc Concent One (gran	Pollutant Emisslon Rate for One Item (g/sec) ER,
Total Nonmethane Hydrocarbons (TNMHC)	4.199E+01	1.059E-01	2 923E-03	2 10KE_03	0 5475.01	2 7025.05	7 OF SE 02
			00-10-20-2	2:1001-00	9.547 11-01	2.7 956-05	7.800E-03
Volatile Organic Compounds (VOCs)							
Ethane	9.250E-01	1.850E-03	6.437E-05	4.635E-05	2.102E-02	6.150E-07	1.752E-04
Ethylene	1.446E+00	2.000E-04	1.013E-04	7.297E-05	3.310E-02	9.682E-07	2.758E-04
Acetylene	1.356E+00	6.500E-04	9.433E-05	6.792E-05	3.081E-02	9.012E-07	2.567E-04
Propane	2.146E-01	1.100E-03	1.489E-05	1.072E-05	4.862E-03	1,422E-07	4.052E-05
Propene	1.183E+00	1.000E-04	8.231E-05	5.926E-05	2.688E-02	7.864E-07	2.240E-04
i-Butane	7.800E-03	3.000E-04	5.118E-07	3.685E-07	1.672E-04	4.890E-09	1.393E-06
i-Butene	2.042E-01	QN	1.423E-05	1.025E-05	4.648E-03	1.360E-07	3.873E-05
1-Butene	1.790E-01	ΩN	1,246E-05	8.971E-06	4,069E-03	1,190E-07	3.391E-05
1,3-Butadiene	3.616E-01	2	2.513E-05	1.810E-05	8.208E-03	2.401E-07	6.840E-05
n-Butane	4.185E-02	7.000E-04	2.871E-06	2.067E-06	9.377E-04	2.743E-08	7.814E-06
trans-2-Butene	1.730E-01	Q	1.203E-05	8.662E-06	3.929E-03	1.149E-07	3.274E-05
2,2-Dimethylpropane	Q	QN	QN	QN	ND	QN	QN
cis-2-Butene	8.910E-02	QN	6.204E-06	4.467E-06	2.026E-03	5.927E-08	1.689E-05
3-Methyl-1-butene	9.000E-03	QN	6.142E-07	4.422E-07	2.006E-04	5.868E-09	1.672E-06
i-Pentane	2	4.000E-04	Q	ND	QN	QN	QN
1-Pentene	3.170E-02	Q.	2.163E-06	1.558E-06	7.065E-04	2.067E-08	5.887E-06
2-Methyl-1-butene	5.210E-02	QN ON	3.555E-06	2.560E-08	1.161E-03	3.397E-08	9.676E-06
n-Pentane	<u>Q</u>	5.000E-04	QN	QN	ΩN	QN	QN
Isoprene	8.560E-02	1.000E-04	5.835E-06	4.201E-06	1.906E-03	5.574E-08	1.588E-05
trans-2-Pentene	2.355E-02	Q	1.642E-06	1.183E-06	5.364E-04	1.569E-08	4.470E-06
cis-2-Pentene	1.240E-02	Q.	8.639E-07	6.220E-07	2.821E-04	8.253E-09	2.351E-06
2-Methyl-2-butene	3.645E-02	Q	2.542E-06	1.830E-06	8.302E-04	2,429E-08	6.918E-06
2,2-Dimethylbutane	2.735E-02	1.500E-04	1.893E-06	1.363E-06	6.182E-04	1.809E-08	5.152E-06
Cyclopentene	QN	QN	QN	QN	QN	GN	QN
4-Methyl-1-pentene	Q	Q	QV	Q	QN	QN	QN
Cyclopentane	Q	1.000E-04	Q	Q	QN	ΩN	QN.
2,3-Dimethylbutane	Ω	1.000E-04	Ω	Ð	ND.	QN	ND
cis-4-Methyl-2-pentene	Q	Q	Q	Q	QN	QN	ND
2-Methylpentane	S	6.500E-04	Q	2	. ON	QN	ND

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

	Measured Actual	Measured	Average	Average	Total Mass of Pollutant	Modeled	Pollutant Emission Rate
Compound	Concentration (mg/m³)	Concentration	Emission Factor	Adjusted Emission Factor	Emitted Per Item (grams)	Concentration for One Item	for One Item (g/sec)
		i i i i i i i i i i i i i i i i i i i		(memor)	Σ	(grams/m²)	FR.
3-Methylpentane	QN	3.000E-04	Q.	Q	QN	QN	CN
Z-Methyl-1-pentene	ON	S	ND	QN	QN	Q	Q
1-Нехепе	3.110E-02	QN	2.122E-06	1.528E-06	6.931E-04	2.028E-08	5.776E-06
n-Hexane	1.740E-02	6.500E-04	1.133E-06	8.156E-07	3.700E-04	1.082E-08	3.083F-06
trans-2-Hexene	QN	QN	Q	QN	QN	QV	QN
2-Methyl-2-pentene	QN	QV	Q	Q	QN	QN	S
cls-2-Hexene	QN	ND	QV	QN	QN	QN	QN
Methylcyclopentane	QN	4.000E-04	QN	S	QN.	2	QN
2,4-Dimethylpentane	QN	1.000E-04	QN	Q	QN.	9	QN
Велгепе	6.500E+00	1.850E-03	4.527E-04	3.259E-04	1,478E-01	4.325E-06	1,232E-03
Cyclonexane	QN -	3.000E-04	QN	S	QN	9	QN
2-Methylhexane	QN	2.000E-04	QN	QN	QN	Q.	QV
2,3-Dimethylpentane	Q	2.000E-04	Q	Q	QN	9	CZ
3-Methylhexane	QN	3.500E-04	QN	QN	QN	2	QN
2,2,4- i rimetnyipentane	Q	4.000E-04	QN	QN	QN	Q	Q
п-нертапе	Q	3.000E-04	QN	QN	ND	9	QN
2,4,4-1 rimethyl-1-pentene	Q	Q	QN	QN	ND	Q	Q.
Methylcyclonexane	Q	2.500E-04	QN	QN	QN	9	Q
2,4,4-1 rmetnyl-z-pentene	S	Q	QN	QN	QN	Q	QV
2.0-Dimethylnexane	Q	1.000E-04	QN	ND	QN	Q	2
2.4-Dimetriyinexane	Q	1.000E-04	QN	QN	ND	QN	Q
Z.o.4-Timemypeniane	Q	2.000E-04	QN	QN	QN	QN	ND
2 3 Dimothylboxoo	5.584E+00	2.800E-03	3.893E-04	2.803E-04	1.271E-01	3.719E-06	1.059E-03
2,3-Dirigitighteralia	Q.	1.000E-04	2	Q	QN	QN	N
3-Ethylhexane	2 2	1.000E-04	2 2	2	Q	Q	QN
2,2-Dimethylheptane	2 5	-3000-14	2 2		QN !:	QN	2
2,2,4-Trimethylhexane	S	2 2	2 2	2 2	ON S	Q !	2
n-Octane	2	1 000F-04	2 2	2 2	2 2	ON.	QN !
Ethylcyclohexane	2	QN	S	2 2	ON CA	ON S	2
Ethylbenzene	8.950E-02	7.300F-03	5 735E-08	A 120E OF	4 9725 00	ON L	2
m-Xylene & p-Xylene	7.188E-01	3.050E-02	4 RORE-05	3.462E-05	1.07.35=0.3	2.479E-08	1.561E-05
Styrene	7.070E-02	S	4 R25E-08	2 474E.08	1.370E-02	4.593E-07	1.309E-04
o-Xylene	9.900E-02	1 005E-02	6 103E-06	4 2045 06	1.5/bE-03	4.609E-08	1.313E-05
n•Nonane	Q	CN	S CN	NO SHE OU	1.993E-03	5.830E-08	1.661E-05
i-Propylbenzene	CZ	2		2 2	2	2	Q
				ON	ON	Q	2

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

ND 1,000E-04 ND ND ND ND ND ND ND N	Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (ib/tem)	Total Mass of Pollutant Emitted Per Item (grams) M	Average Modeled Concentration for One Item (grams/m³) CONC	Pollutant Emission Rate for One Item (g/sec) ÈR,
benzene ND 2000E-04 ND ND ND benzene ND 1,000E-04 ND ND ND benzene & sec-Bulylbenzene ND 1,000E-04 ND ND ND benzene & sec-Bulylbenzene ND 2,500E-04 ND ND ND nnethane ND ND ND ND ND ND ND nocethane ND ND ND ND ND ND ND ND nocethane ND ND ND ND ND ND ND ND nocethane ND ND ND ND ND <t< td=""><td>n-Propylbenzene</td><td>QN</td><td>1.000E-04</td><td>ND</td><td>QN</td><td>QN</td><td>QN</td><td>QN</td></t<>	n-Propylbenzene	QN	1.000E-04	ND	QN	QN	QN	QN
Denzene & sec-Butylbenzene ND 1,000E-04 ND ND ND Denzene & sec-Butylbenzene ND 1,000E-04 ND ND ND Denzene & sec-Butylbenzene ND 2,500E-04 ND ND ND ND ND 2,000E-04 ND ND ND ND ND ND ND ND ND ND ND ND Interfeare ND ND <td>p-Ethyltoluene</td> <td>QN</td> <td>2.000E-04</td> <td>ΩN</td> <td>QN</td> <td>QN</td> <td>QN</td> <td>QN</td>	p-Ethyltoluene	QN	2.000E-04	ΩN	QN	QN	QN	QN
Denzene ND 1,000E-04 ND ND ND Denzene & sec-Bulylbenzene ND 2,500E-04 ND ND ND Denzene & sec-Bulylbenzene ND 2,000E-04 ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND Oncethane ND ND ND ND ND ND Oncethane ND ND ND ND ND ND Inde ND ND ND <	m-Ethyltoluene	QV	1.000E-04	ON	QN	ND	QN	QN
Denzene & sec-Butylbenzene ND ND ND ND Denzene & sec-Butylbenzene ND 2,5006-04 ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND oroethane ND ND ND </td <td>1,3,5-Trimethylbenzene</td> <td>QN</td> <td>1.000E-04</td> <td>QN</td> <td>QN</td> <td>QN</td> <td>QN</td> <td>2</td>	1,3,5-Trimethylbenzene	QN	1.000E-04	QN	QN	QN	QN	2
Denzene & sec-Bulybenzene ND 2.500E-04 ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND </td <td>o-Ethyltoluene</td> <td>QN</td> <td>QN</td> <td>QN</td> <td>ND</td> <td>QN</td> <td>Q</td> <td>Q</td>	o-Ethyltoluene	QN	QN	QN	ND	QN	Q	Q
ND 2,000E-04 ND ND ND ND ND <	1,2,4-Trimethylbenzene & sec-Butylbenzene	QN	2.500E-04	QN	QN	QN	QN	QN
ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND nncethane ND ND ND ND ND ND ND oroethane ND ND ND ND ND ND ND oroethane ND ND ND ND ND ND ND ND oroethane ND ND ND ND ND ND ND ND oroethane ND	n-Decane	QN	2.000E-04	QN	QN	QN	QV	QN
ND	alpha-Pinene	QN	QN	QN	QN	QN	Q.	QN
ND ND ND ND ND nnethane ND ND ND ND ND nnethane ND ND ND ND ND ND oroethane ND ND ND ND ND ND ND oroethane ND ND 2.566E-05 1.840E-05 8.34TE-03 ND oroethane ND ND 2.566E-05 1.840E-05 8.34TE-03 1.764E-03 nn ND ND ND ND ND ND ND loe ND ND ND ND ND ND ND ND loe ND ND 4.705E-07 3.880E-07 1.334E-05	beta-Pinene	QN	QN	QN	QN	QN	QN	QN
ND ND ND ND ND oromethane ND 6.650E-04 ND ND ND de ND ND ND ND ND de ND ND ND ND ND siflocroethane ND ND ND ND ND siflocroethane 1.310E-02 ND ND ND ND ne ND ND ND ND ND ND ne ND ND ND ND ND ND de ND ND 1.336E-07 1.737E-03 1.334E-05 1.334E-03 nofluoromethane 1.708E-03 1.088E-03 1.084E-09 1.338E-03 1.334E-03 1.33	delta 3-Carene	QN	QN	QN	QN	QN	QN	QN
ND ND ND ND Abloride politivormethane ND 6,650E-04 ND ND ND Abloride politivormethane ND ND ND ND ND Abloride politivormethane ND ND ND ND ND attadiene ND ND ND ND ND ND attadiene ND ND ND ND ND ND attadiene ND ND ND ND ND ND normide ND ND ND ND ND ND ND normide ND ND 2,56E-05 1,580E-05 3,34E-05 3,34E-05 3,34E-03 normide ND ND ND 1,705E-07 3,38E-07 1,73E-04 3,34E-05 3,34E-03 normide ND ND ND ND ND ND ND normide ND ND ND ND ND	d-Limonene	QN	QN	ND	QN	ND	ON	QN
ND ND ND ND ND ND ND ND	MTBE	QN	QN	ND	QN .	ND	Q	QN
ND	Dichlorodifluoromethane	QN	6.650E-04	QN	QN	QN	8	S
ND	Methylchloride	QN	QN	ND	QN	QN	QN	QN
1.310E-02 ND 9.266E-07 6.672E-07 3.026E-04 8.347E-03 3.677E-01 ND 2.556E-05 1.840E-05 8.347E-03 2.556E-05 1.840E-05 8.347E-03 2.556E-05 1.840E-05 8.347E-03 2.556E-05 1.840E-05 8.347E-03 2.540E-07 1.830E-07 1.737E-04 8.388E-07 1.088E-03 1.088E-03 1.088E-03 1.088E-03 1.088E-07 1.537E-04 8.388E-07 1.351E-05 9.726E-06 4.411E-03 1.00 ND	Dichlorotetrafluoroethane	QN	QN	QN	S	QN	QN	QN
3,677E-01 ND 2,556E-05 1,840E-05 8,347E-03 2 ND ND ND ND ND ND ND ne 7,744E-03 ND 5,320E-07 3,830E-07 1,737E-04 5 ne 1,706E-03 1,088E-03 4,084E-08 2,940E-08 1,1334E-05 5 nb 1,706E-03 1,150E-01 5,666E-05 4,076E-07 1,537E-04 6 nD ND ND ND ND ND ND roethane ND ND ND ND ND ND nD ND ND ND ND ND ND ND nD ND ND ND ND ND ND ND ND nD ND ND ND ND ND ND ND ND ND ND nD ND ND ND ND ND ND ND ND ND </td <td>Chloroethene</td> <td>1.310E-02</td> <td>QN</td> <td>9.266E-07</td> <td>6.672E-07</td> <td>3.026E-04</td> <td>8.853E-09</td> <td>2.522E-06</td>	Chloroethene	1.310E-02	QN	9.266E-07	6.672E-07	3.026E-04	8.853E-09	2.522E-06
ND ND<	1,3-Butadiene	3.677E-01	QN	2.556E-05	1.840E-05	8.347E-03	2.442E-07	6.956E-05
ne 7.444E-03 ND 5.320E-07 3.830E-07 1.737E-04 E ne 1.706E-03 1.088E-03 4.084E-08 2.940E-08 1.1334E-05 2 e 6.758E-03 ND 4.705E-07 3.388E-07 1.537E-04 6 nD ND ND ND ND ND ND roethane ND ND ND ND ND ND roethane ND ND ND ND ND ND ND roethane <t< td=""><td>Methylbromide</td><td>QN</td><td>QN</td><td>QN</td><td>QN</td><td>ND</td><td>QN</td><td>QN</td></t<>	Methylbromide	QN	QN	QN	QN	ND	QN	QN
ne 1,706E-03 1,088E-03 4,084E-08 2,940E-08 1,334E-05 3 6,758E-03 ND 4,705E-07 3,388E-07 1,537E-04 6 9,398E-01 1,150E-01 5,666E-05 4,079E-05 1,850E-02 6 ND ND ND ND ND ND ND roethane ND ND ND ND ND ND ND ND ND ND ND ND ND ND NB ND ND ND ND ND ND ND NB ND ND ND ND ND ND ND NB ND ND ND ND	Ethylchloride		QN	5.320E-07	3.830E-07	1.737E-04	5.082E-09	1.448E-06
6.758E-03 ND 4,705E-07 3,388E-07 1,537E-04 4 9.398E-01 1,150E-01 5,666E-05 4,079E-05 1,850E-02 6 ND ND ND ND ND ND ND roethane ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND<	Trichloromonofluoromethane	1.706E-03	1.088E-03	4.084E-08	2.940E-08	1.334E-05	3.902E-10	1.111E-07
roethane ND ND ND ND ND ND roethane ND 5.882E-04 ND ND ND ND roethane ND 5.882E-04 ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND NB ND ND ND ND ND ND ND	Vinylidenechloride	6.758E-03	ND	4.705E-07	3.388E-07	1.537E-04	4.495E-09	1.281E-06
roethane ND ND ND ND roethane ND 5.882E-04 ND ND ND ND ND ND ND ND ND ND ND 1.351E-05 9.726E-06 4.411E-03 1 ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND ND NB ND 1.449E-05 1.7449E-05 7.818E-05 2.731E-05 ND ND ND ND ND ND ND NB ND ND ND ND ND ND NB ND ND ND ND ND ND	Methylenechloride	9.398E-01	1.150E-01	5.666E-05	4.079E-05	1.850E-02	5.413E-07	1.542E-04
roethane ND <	Allyichloride	QN	Q	Q	QN	ND	Q	ND
ND ND ND ND ND ND ND ND	1,1,2-Trichloro-1,2,2-trifluoroethane	QN	5.882E-04	QN	QN	QN	QN	QN
ND ND ND ND ND ND ND ND	1,1-Dichloroethane	QN	QN	Q.	QN	ON	Q	QN
1.929E-01 ND 1.351E-05 9.726E-06 4.411E-03 1 ND N	1,2-Dichloroethene	Q	Q	Q.	QN	QN	S	Q
ND ND ND ND ND ND ND ND	Chloroform	1.929E-01	Q	1.351E-05	9.726E-06	4.411E-03	1.290E-07	3.676E-05
ND ND ND ND ND ND ND ND	1,2-Dichloroethane	QN	Q.	Q	S	QN	Q	Q
6.612E+00 1.882E-03 4.604E-04 3.315E-04 1.504E-01 1.504E-01 3.828E-03 3.310E-04 2.394E-07 1.724E-07 7.818E-05 ND	Methylchloroform	QN	QN	QN	ON.	ND	Q	QN
3.828E-03 3.310E-04 2.394E-07 1.724E-07 7.818E-05 ND	Benzene	6.612E+00	1.882E-03	4.604E-04	3.315E-04	1.504E-01	4.399E-06	1.253E-03
ND N	Carbontetrachloride	3.828E-03	3.310E-04	2.394E-07	1.724E-07	7.818E-05	2.287E-09	8.515E-07
2.075E-01 ND 1.449E-05 1.043E-05 4.733E-03 ND N	1,2-Dichloropropane	ΔN	Q	QN	Q.	ND	QN	QN
DN D	Trichloroethylene	2.075E-01	Q	1.449E-05	1.043E-05	4.733E-03	1.385E-07	3.944E-05
	cis 1,3-Dichloro-1-propene	QV	Q	Q	Q.	ND	Q	Q
	trans 1,3-Dichloro-1-propene	Q	Q	Q	9	QV	Q	QN
מא מא מא	1,1,2-Trichloroethane	QN	QN	ON	QN	QN	QN	Q

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

Toluene Concentration (mg/m³) (mg/m³) (f 1,2-Dibromoethane 5.680E+00 2.8 1,2-Dibromoethane 1.025E-02 2.8 Chlorobenzene 1.332E-01 1.332E-01 Ethylbenzene 1.332E-01 1.1 Ethylbenzene ND 1.1 Tillerendene ND 1.1 1.1.2,2-Tetrachloroethane ND 1.0 1.1.2,4-Trimethylbenzene ND 3.0 1.2,4-Trimethylbenzene ND 3.0 1.2,4-Trimethylbenzene ND 3.0 1.2,4-Trimethylbenzene ND 3.0 1.2,4-Trimethylbenzene 8.646E-02 1.0 Benzylchloride ND 3.00E-03 0-Dichlorobenzene 6.583E-03 8.790E-03 1.2,4-Trichlorobenzene 6.583E-03 9.790E-02 Hexachlorobutadiene 6.233E-02 1.0 Methylnitrite ND Actorio detylene 6.233E-02 Actorioritrile Actorioritrile 6.237E-02 Actorioritrile 6.2	Background					The last in Date
moethane (mg/m²) partylene 5,680E+00 pathylene 1,025E-02 mizene 1,374E-01 ene 7,313E-01 ene 1,374E-01 ene 7,313E-01 ene ND etrachloroethane ND nethylbenzene ND loride ND loride ND robenzene 3,882E-02 elylene 6,583E-03 sinotobenzene 6,583E-02 elylene 6,235E-02 ene ND le 1,375E-01 lie 2,047E-02 lie 8,335E-01 lie 6,835E-02 lie 6,835E-01 lie 6,835E-02 lie 6,835E-02 <td>Concentration</td> <td>Adjusted Emission Eactor</td> <td>Adjusted</td> <td>Emitted Per Item</td> <td>Concentration for</td> <td>for One Item</td>	Concentration	Adjusted Emission Eactor	Adjusted	Emitted Per Item	Concentration for	for One Item
serior Serior sethylene 1,025E-02 nrzene 1,332E-01 inzene 1,332E-01 inzene 1,374E-01 ene 7,313E-01 ene 1,374E-01 ene 1,374E-01 ene 1,374E-01 ene 1,374E-01 nobertachloroethane 1, ND nethylbenzene 1, ND loride ND robenzene 8,597E-02 shlorobenzene 6,583E-03 robutadiene 6,533E-02 etylene 6,233E-02 etylene 6,247E-02 ile 1,375E-01 ile 6,336E-01 ene 6,336E-01	(_m / _{gm})	(Ib/Ib NEW)	(lb/item)	(Signis)	(grams/m³)	(bes/6)
Season Season Incethane ND Dethylene 1.0255-02 Inzene 1.332E-01 Izene 1.332E-01 Izene 1.374E-01 ene 7.313E-01 ene ND etrachloroethane ND nethylbenzene ND nethylbenzene ND introbenzene ND obenzene 8.646E-02 Indride ND robenzene 8.790E-03 dobenzene 6.583E-02 etylene 6.533E-02 etylene 6.233E-02 ene ND ite Instance ite 6.335E-02 ite Instance <th></th> <th></th> <th></th> <th>W</th> <th>CONC</th> <th>ER,</th>				W	CONC	ER,
ND Dethylene 1.025E-02 Inzene 1.025E-02 Inzene 1.374E-01 ene 1.374E-01 ene 7.313E-01 ene 7.313E-01 ene ND etrachloroethane ND nethylbenzene ND nethylbenzene ND robenzene ND obenzene 8.697E-02 shlorobenzene 6.583E-03 obenzene 6.233E-02 etylene 6.233E-02 ene ND rite ND iie ND iie 2.047E-02 iie 8.270E-03 iie 6.335E-01 iiie 6.335E-01	2.848E-03	3.960E-04	2.851E-04	1.293E-01	3.783E-06	1.078E-03
1.025E-02 1.026Halle	QN	ND	ND	ND	Q	QN
1.332E-01 1.37E-01 1.	QN	7.070E-07	5.090E-07	2.309E-04	6.755E-09	1.924E-06
tzene 1.374E-01 ene 7.313E-01 ene 7.313E-01 etrachloroethane ND sether-02 ND rethylbenzene ND methylbenzene ND loride ND robenzene 3.882E-03 obenzene 9.790E-03 obenzene 6.583E-02 etylene 6.233E-02 ene ND ite Siste-01 ite Siste-02 ite Siste-02	QN	9.323E-06	6.712E-06	3.045E-03	8.907E-08	2.537E-05
ene 7.313E-01 In D etrachloroethane ND methylbenzene IND methylbenzene IND methylbenzene IND methylbenzene IND mobenzene IND mobenzen	1.121E-02	8.805E-06	6.340E-06	2.876E-03	8.412E-08	2.396E-05
ND	3.102E-02	4.892E-05	3.522E-05	1.598E-02	4.673E-07	1.331E-04
ND ND ND ND ND ND ND ND	QN ON	ND	S	QN	QV	ND
8.646E-02 Ine ND ND Inglenzene InD ND Insene	. QN	S	QN	N	9	QV
hylbenzene ' ND hylbenzene ' ND hylbenzene ' ND hylbenzene ND hylbenzene ND hylbenzene 3.882E-03 hylbenzene 8.697E-02 hylbenzene 6.233E-02 hylbenzene 6.233E-02 hylbenzene 6.233E-02 hylbenzene 6.233E-02 hylbenzene 6.233E-02 hylbenzene 6.233E-01 hylbenzene hylbenze	1.022E-02	5.342E-06	3.846E-06	1.745E-03	5.104E-08	1.454E-05
hylbenzene ' ND hylbenzene ND ND hylbenzene ND ND hylbenzene ND ND hylbenzene 3.882E-03 hzene 9.790E-03 hzene 6.683E-02 hrene 6.233E-02 hrene 6.233E-02 hrene 6.233E-02 hrene 6.235E-01 hylbenzene hylbe	Q	Q	QN	QN	Q	CN
hylbenzene ND ND 18 In ND 3.882E-03 Inzene 3.882E-03 Inzene 9.790E-03 Inzene 6.583E-02 Intadiene 6.233E-02 Intadiene 6.233E-02 Interpretation of the second	2	Q	QN	Q	Q	S
ND ND ND ND ND ND ND ND	3.051E-04	QN	S	QN	Q	9
3.882E-03 nzene 3.882E-03 nzene 9.790E-03 nzene 5.697E-02 obenzene 6.583E-02 utadiene 6.233E-02 ene ND N	QN	Q	9	QN	2	CN
nzene 9.790E-03 nzene 5.697E-02 robenzene 6.583E-03 utadiene 6.233E-02 ene ND nD ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01 nD 2.047E-02 nD 2.047E-02 nD 2.047E-02 nD 2.047E-02 nD 2.047E-03 nD	ND	2.716E-07	1.956E-07	8.870E-05	2.595E-09	7.392E-07
nzene 5.697E-02 robenzene 6.583E-03 utadiene 6.426E-02 ene 6.233E-02 nD ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01	ND	6.847E-07	4.930E-07	2.236E-04	6.541E-09	1.863E-06
Obenzene 6.583E-03 utadiene 6.426E-02 ene 6.233E-02 nD ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01	QN	3.982E-06	2.867E-06	1.301E-03	3.804E-08	1.084E-05
utadiene 6.426E-02 ene 6.233E-02 ND ND ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01	QN	4.492E-07	3.234E-07	1.467E-04	4.292E-09	1.223E-06
6.233E-02 ND ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01	QN	4.432E-06	3,191E-06	1.448E-03	4.235E-08	1.206E-05
ND ND 1.375E-01 2.047E-02 8.270E-03 6.936E-01	QN	4.254E-06	3.063E-06	1.389E-03	4.064E-08	1.158E-05
1.375E-01 1.375E-01 2.047E-02 19 8.270E-03 6.936E-01	3.494E-04	QN	QN	QN	Q	Q
1.375E-01 2.047E-02 19 8.270E-03 6.936E-01	QN	QN	QN	QN	Q	QN.
2.047E-02 19 8.270E-03 6.936E-01	Q	9.567E-06	6.888E-06	3.124E-03	9.140E-08	2.604E-05
8.270E-03 6.936E-01	Q	1.397E-06	1.006E-06	4.562E-04	1.335E-08	3.802E-06
6.936E-01	Q	5.910E-07	4.255E-07	1.930E-04	5.646E-09	1.608E-06
	5.526E-04	4.839E-05	3.484E-05	1.580E-02	4.623E-07	1.317E-04
	Q	Q	Q	ON	QN	ND
T.734E-01	Q	1.183E-05	8.519E-06	3.864E-03	1.130E-07	3.220E-05
80	2	5.760E-05	4.147E-05	1.881E-02	5.503E-07	1.568E-04
1.2	Q	8.427E-06	6.068E-06	2.752E-03	8.051E-08	2.294E-05
	S	2	Q	ND	QN	2
	Q	Q	ND	ND	QN	N
D	Q	Q	QN	ON	ΩN·	QN
D	2	Q	Q	QN	QN	QV
1 Brown 2 aplacestran	2	2	QN	QN	QN	QV
	2	Q	Q	ON	QN	S
Colonio-1-cinolopiopane	2	Q	2	QN	QN	N

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (lb/item)	Total Mass of Pollutant Emitted Per Item (grams)	Average Modeled Concentration for One Item (grams/m³)	Pollutant Emission Rate for One Item (g/sec)
					M	CONC	ER,
1,2-Dichlorobutane	QN	ND	QN	QN	QN	QN	QN
1,2,3-Trichloropropane	QN	ND	QN	QN	QN	QN	QN
1-Chloro-2-methylbenzene	QN	ND	QN	QN	QN	QN	QN
1-Chloro-3-methylbenzene	QN	QN	QN	QN	QN	QN	QN.
1-Chloro-4-ethylbenzene	QN	QN	QN	QN	QN	QN	QN
Pentachloro-1-propene	QN	ND	ON	QN	QN	QN	QN
Hexachloroethane	QN	QN	QN	QN	QN	Q	QN
1,2-Dichloro-3-methylbenzene	ΩN	ND	ND	QN	ND	Q	QN.
Carbonyl Sulfide	QN	QN	QN	QV	QN	Q	Q
Trichloroacetonitrile .	QN	QN	QN	ND	ND	QN	QV
Dichloroacetonitrile	QN	QN	QN	S	QN	S	Q
Isothiocyanatomethane	QN	QN	NO	QN	QN	QN	Q.
1,1-Dichloro-2-propanone	8.731E-02	Q	6.184E-06	4,452E-06	2.019E-03	5.908E-08	1.683E-05
2-Thiophenecarboxaldehyde	5.238E-02	QN	3.575E-06	2.574E-06	1,167E-03	3,415E-08	9.729E-06
Acetaldehyde	6.795E+00	5.414E-04	4.734E-04	3.408E-04	1.546E-01	4.522E-06	1.288E-03
Ethanol	9.166E-02	3.104E-04	6.335E-06	4.561E-06	2.069E-03	6.053E-08	1.724E-05
Acrolein	1.678E+00	4.557E-04	1.173E-04	8.445E-05	3.831E-02	1.121E-06	3.192E-04
Acetone	1.143E+01	3.851E-02	7.945E-04	5.720E-04	2.595E-01	7.590E-06	2.162E-03
Propanal	9.080E-01	QN ON	6.325E-05	4.554E-05	2.066E-02	6.043E-07	1.721E-04
Furan	2.004E-01	QN	1.425E-05	1.026E-05	4.655E-03	1.362E-07	3.879E-05
2-Propanol	2,496E-01	1.578E-04	1.744E-05	1.255E-05	5.694E-03	1.666E-07	4.745E-05
Methacrolein	4.501E-01	QN	3.125E-05	2.250E-05	1.021E-02	2.985E-07	8.505E+05
MTBE	1.780E-02	2.238E-04	1.272E-06	9.160E-07	4.155E-04	1.215E-08	3.462E-06
Methyl-vinyl ketone	7.201E-01	1.785E-04	5.031E-05	3.622E-05	1.643E-02	4.807E-07	1.369E-04
2,3-Butanedione	2.115E+00	QN	1.505E-04	.1.084E-04	4.915E-02	1.438E-06	4.096E-04
Butanal	9.967E-02	Q	6.980E-06	5.026E-06	2.280E-03	6.669E-08	1.900E-05
2-Butanone	2.939E+00	2.353E-03	2.048E-04	1.474E-04	6.688E-02	1.956E-06	5.573E-04
2-Methylfuran	3,325E-01	Q	2.321E-05	1.671E-05	7.581E-03	2.218E-07	6.317E-05
3-Methylfuran	5.819E-02	Q	4.158E-06	2.994E-06	1.358E-03	3.972E-08	1.132E-05
trans-2-Butenal	5.489E-01	3.761E-04	3.912E-05	2.816E-05	1.277E-02	3.737E-07	1.065E-04
Tetrahydrofuran	Ð	2.272E-04	Q	Q	QV	QN	ND
3-Methyl-2-butanone	1.014E-01	Q	7.075E-06	5.094E-06	2.311E-03	6.759E-08	1.925E-05
Acetic Acid	3.640E-01	Q	2.546E-05	1.833E-05	8.314E-03	2.432E-07	6.929E-05
1-Butanol	2	Q	Q	Q	QN	QN	ND
1-Penten-3-one	2.591E-01	Ω	1.818E-05	1.309E-05	5.938E-03	1.737E-07	4.949E-05
2-Pentanone	2.252E-01	Ω	1.572E-05	1.132E-05	5.133E-03	1.502E-07	4.278E-05

Table B-2: Air Modeling Output Data for Volatile Organic Compounds

Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (ib/lb NEW)	Average Adjusted Emission Factor (lb/item)	Total Mass of Pollutant Emitted Per Item (grams) M	Average Modeled Concentration for One Item (grams/m³)	Pollutant Emission Rate for One Item (g/sec) ER,
Pentanal	QN	3.743E-04	S	QN	QN	QN	QN
2.3-Pentanedione	6.551E-01	ND	4.681E-05	3.371E-05	1.529E-02	4.473E-07	1,274E-04
1,2-Dichloro-2-methylpropane	QN	ND	QN	ND	QN	Q	QN
3-Pentanone	1.191E-01	ND	8.129E-08	5.853E-06	2.655E-03	7.766E-08	2.212E-05
2.5-Dimethylfuran	3.139E-01	ND	2.142E-05	1.542E-05	6.995E-03	2.046E-07	5.829E-05
4-Methyl-2-pentanone	QN	ND	QN	QN	QN	Q	S
trans-3-Penten-2-one	1.851E-01	ON	1.158E-05	8.334E-06	3.780E-03	1.106E-07	3.150E-05
Cyclopentanone	1.548E-01	ND	1.086E-05	7.822E-06	3.548E-03	1.038E-07	2.957E-05
2-Hexanone	2.879E-02	QN	2.013E-06	1.449E-08	6.574E-04	1.923E-08	5.479E-06
Hexanal	4.430E-02	2.524E-04	3.111E-06	2.240E-06	1.016E-03	. 2.972E-08	8.465E-06
3-Furaldehyde	3.915E-01	2.400E-04	2.726E-05	1.963E-05	8.902E-03	2.604E-07	7.418E-05
2-Cyclopenten-1-one	QN	QN	ND	QN	QN.	2	QN
2-Furaldehyde	2.359E+00	2.294E-03	1.654E-04	1.191E-04	5.400E-02	1.580E-06	4.500E-04
1-Acetoxyacetone	1.153E+00	QN	8.236E-05	5.930E-05	2.690E-02	7.869E-07	2.242E-04
2-Heptanone	5.883E-03	QN	4.015E-07	2.891E-07	1.311E-04	3.836E-09	1.093E-06
Нертапа	2.151E-02	3.001E-04	1.448E-06	1.042E-06	4.728E-04	1.383E-08	3.940E-06
5-Methyl-2-furaldehyde	7.644E-01	QN	5.409E-05	3.895E-05	1.767E-02	5.168E-07	1.472E-04
Benzaldehyde	4.597E-01	8.715E-04	3.218E-05	2.317E-05	1.051E-02	3.074E-07	8.758E-05
Benzofuran	1.524E-01	QN	1.072E-05	7.721E-06	3.502E-03	1.024E-07	2.918E-05
Octanal	3.804E-02	6.223E-04	2.639E-06	1.900E-06	8.620E-04	2.522E-08	7.183E-06
Acetophenone	2.241E-01	ON	1.576E-05	1.135E-05	5.148E-03	1.506E-07	4.290E-05
2-Nonanone	ON	QN	QN	9	QN	QN	QN
Nonanai	5.899E-02	5.198E-04	3.990E-06	2.873E-06	1.303E-03	3.812E-08	1.086E-05
Footnotes:							
ND = Not Detected							

NEW = Net Explosive Weight

Items in bold represent duplicate values for those compounds that are common for Method TO-14 and TO-12.

Table B-3: Air Modeling Output Data for Semi-Volatile Organic Compounds

		Green Smoke Grenade	e Grenade		Number of Items (I):		item
		NEW, Ib	= 0.72		Release duration (t):	120	seconds
		Number of Items	tems = 1		Unit Concentration (UC):	3.51E-03	g/m³
Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (lb/Item)	Total Mass of Pollutant Emitted Per ttem (grams) M	Average Modeled Concentration for One Item (grams/m³) CONC	Pollutant Emission Rate for One Item (grams/sec) ER,
Particulate/Vapor-phase SVOCs							
N-Nitrosodimethylamine	Ð	2	QV	QN	QN	QN	QN
Pyridine	ND	QN	ND	QN	QN	QN	QN
2-Picoline	ND	ON	ND	QN	QN	QN	ND
Methyl methanesulfonate	ND ;	QN	ND	QN	QN	QN	ND
N-Nitrosomethylethylamine	ND	ND	ON	QN	QN	QN	QN
N-Nitrosodiethylamine	N	QN	QN	QN	QN .	QN	ND
Ethyl methanesulfonate	ND	QN	ND	QN	QN	QN	QN
Phenol	ND	QN	Q.	Q.	QN	Q	2
Aniline	ND	ND	ND	QN	ND	QN	QN
bis(2-Chloroethyl)ether	ND	QN	Q	S	QN	Q	QN
Pentachloroethane	ND	ND	ND	Q.	ND	Q	QN
2-Chlorophenol	ND	QN	QN	QN	QN	QN	QN
1,3-Dichlorobenzene	ND	ON	ON	Q	QN	QN	QN
1,4-Dichlorobenzene	ND	QN	QN .	QN	QN '	QN	QN
Benzyl alcohol	ND	QN	ND	QN	QN :	2	Q
2-Methylphenol	ND	QN	ND	QN	QN	Q	2
1,2-Dichlorobenzene	ND	QN	ND	QN	QN	Q	Q.
bis(2-Chloroisopropyl)ether	ND	QN	ND	QN	ΩN	Q	Q
o-Toluidine	ND	ON	ΩN	Q	QN	QN	QN
4-Methyiphenol/3-Methyiphenol	ND ND	QN	QN	ΩN	QN	QN	2
N-Nitroso-di-n-propylamine	ND	QN	2	S	QN	Q	QN
Acetophenone	ND	1.897E-03	ND	ΩN	QN	QN	Q
N-Nitrosomorpholine	ND	QN	ND	ΩN	QN	QN	NO ON
N-Nitrosopyrrolidine	ND	QN	ND	QN	ΩN	NO	S
Hexachloroethane	ND	QN	ND	ΩN	QN	QN	QN
Nitrobenzene	ON	2	ND	ND	QN.	QN	QN
N-Nitrosopiperidine	Q.	Q	NO P	Q	QV.	Q	Q
Isophorone	Q.	 Q	N	S	DN	Q	Q
2,4-Dimethylphenol	QN	Q	QN	Ω	QN	Q	QN
2-Nitrophenol	S P	Q	Q.	Q	QN	Q	ΩN
bis(2-Chloroethoxy)methane	N N	Q	ND	Q.	ND	Q	Q.

Table B-3: Air Modeling Output Data for Semi-Volatile Organic Compounds

Compound	Measured Actual	Measured Background	Average Adjusted	Average Adjusted	Total Mass of Pollutant Emitted Per Item	Average Modeled Concentration for One Item	Pollutant Emission Rate for One Item
	Concentration (mg/m³):	Concentration (mg/m³)	Factor (Ib/Ib NEW)	Factor (lb/item)	(grams)	(grams/m³)	(grams/sec)
				, included in	W	CONC	ER,
Benzoic acid	ND	ON	QN	QN	QN	ON	. QN
2,4-Dichlorophenol	ND	QN	QN	QN	ON	QN	QN
1,2,4-Trichlorobenzene	ND	QN	QN	ND	QN	Q	QN
Naphthalene	ΩN	QN	QN	QN	ON	Q	QN
p-Chloroaniline	ND	QN	QN	Q	QN.	Q	S
2,6-Dichlorophenol	ND	QN	QN	QN	QN	9	QN
Hexachloropropene	QN	QN	ND	QN	QN	9	Q.
Hexachlorobutadiene	ND	ND	QN	QN	ON	9	Q.
Dimethylphenethylamine	ND	QN	QN	QN	ON.	9	Q
N-Nitroso-di-n-butylamine	QN	QN	QN	Q	QN	9	Q
4-Chloro-3-methylphenol	ND	QN	QN	QN	QN	2	2
Safrole	ND	ND	QN	QN	Q.	Q	Q
2-Methylnaphthalene	QN	ND	QN	Q	QN	Q	QN
1,2,4,5-Tetrachlorobenzene	ND	ND	QN	QN	QN	9	QN
Hexachlorocyclopentadiene	QN	ND ND	QN	QN	ON	QV	9
2,4,6-Trichlorophenol	Q	QN	QN	ND	QN	Q.	Q
2,4,5-Trichlorophenol	QN	QN	QN	ON	QN	QN	QN
Isosafrole	Q	QN	ND	QN	ON	Q	Q
2-Chloronaphthalene	QN	QN	QN	QN	QN	2	Q
2-Nitroaniline	S	QN	QN	QN	ON	2	2
1,4-Naphthoquinone	ND	QN	ND	ND	QN	2	Q
Dimethylphthalate	Q	QN	ON	ON	ND	QN	Q
1,3-Dinitrobenzene	Q	Q	QN	QN	ND	QN	QN
2,6-Dinitrotoluene	Q	2	QQ.	Q	ND	QN	- QN
Acenaphthylene	Q	2	Q	Q	ND	QN	QN
3-Nitroaniine	Q	9	Q	Q	ND	QN	QN
4-Nitrophenoi	Q	2	Q	Q	ND	QN	QN
2,4-Unitrophenoi	Q	9	QV	2	ND	QN	QN
Acenaphthene	Q	9	Q	S	ND	QN	QN
z,4-Uinitrotoiuene	Q	ġ	Q	Q	ND	QN	Q
Dibenzoturan	Q	2	QN.	QN	QN	QN: :	2
Pentachlorobenzene	Q	Q	Q	ND	QN .	QΝ	QN
1-Naphthylamine	Q	Q	QN	Q	QN	QN	QN
2-Naphthylamine	Q	QN	Q	QN	ND	QN	- Q
2,3,4,6-Tetrachlorophenol	Q	QN	ON	QN	QN	QN	Q

Table B-3: Air Modeling Output Data for Semi-Volatile Organic Compounds

Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m³)	Average Adjusted Emission Factor (Ib/Ib NEW)	Average Adjusted Emission Factor (ib/item)	Total Mass of Pollutant Emitted Per Item (grams) M	Average Modeled Concentration for One Item (grams/m³) CONC	Pollutant Emission Rate for One Item (grams/sec) ER ₁
Diethylphthalate	QN	QN	QN	ON	ON	QN	ND
4-Chlorophenylphenyl ether	QN	QN	QN	ND	ND	QN	QN
Fluorene	QN	QN	QN	ND	ON	QN	QN
5-Nitro-o-toluidine	QN	QN	ΩN	ND	ND	QN	QN
4-Nitroaniline	QN	QN	ΩN	ND	ND	QN	QN
4,6-Dinitro-2-methylphenol	QN	QN	ND	ND	ND	QN	QN
Diphenylamine/N-NitrosoDPA	QN	QN	ND	ND	ND	QN	- Q
sym-Trinitrobenzene	QN	QN	ND	ND	ND	QN	ND
Diallate	QN .	QN	ND	ND	ND	QN	ND
Phenacetin	QN	ND	Q	ND	ND	QN	QN
4-Bromophenylphenyl ether	QN	QN	QN	ND	QN	QN	QN
Hexachlorobenzene	QN	Q	Q	QN	QN	Q	QN
4-Aminobiphenyi	QN	٩	QN	ND N	QN .	Q	QN
Pronamide	QN	QN	QN	ND	ND	QN	QN
Pentachlorophenol	2	Q	Q	S	ND	QN	9
Pentachloronitrobenzene	QN	QN	ND	ND	ND	QN	ND
Phenanthrene	QN	QN .	QN	QN	ND	QN	QN
Anthracene	Q	Q	9	Q	QN	Q	임
Carbazole	QN	QN	9	Q	ON.	Q	Q
Di-n-butylphthalate	ON.	QN	QN	Q	ON	QN	QN O
4-Nitroquinoline-1-oxide	S	Q	9	Q	QN	Q	Q
Methapyrilene	Q	Q	QN	Q	ND	QN	Q
Fluoranthene	2	Q	2	2	NO.	Q	Q
Benzidine	9	Q	2	Q	S	Q	Q
Pyrene	Q.	2	2	Q	QN	QV	Q
p-Dimethylaminoazobenzene	2	Q	S	Q	<u>Q</u>	Q	N Q
Chlorobenzilate	QN	QN	Q	Q	ON	Q	9
Kepone	QN ON	QN	Q	Q	ND.	Q	Q
Butylbenzylphthalate	QN	Q	2	2	S O	Q	S
3,3'-Dimethylbenzidine	QN	QN	Q	Q	ON.	QN	Q
2-Acetylaminofluorene	ᄝ	2	9	ND.	ON	Q	Q
bis(2-Ethylhexyl)phthalate	QN	9	Q	Q	ON	QN	Q.
3,3'-Dichlorobenzidine	QN	Q	Q	Q	QN	QN	Q
Benz(a)anthracene	Q	2	Q	Q	2	Q	2
Chrysene	QN	QN.	2	2	QN	QN	QN

Table B-3: Air Modeling Output Data for Semi-Volatile Organic Compounds

Compound	Measured Actual Concentration (mg/m³)	Measured Background Concentration (mg/m²)	Average Adjusted Emission Factor (tb/lb NEW)	Average Adjusted Emission Factor (lb/ltem)	Total Mass of Pollutant Emitted Per Item (grams)	Average Modeled Concentration for One Item (grams/m³)	Pollutant Emission Rate for One Item (grams/sec)
Di-n-octylphthalate	S	CN	CZ Z		IAI	SOINCE	EK ₁
7.12-Dimethylhenz/alanthracene			2	2	NO	QN	QN
Benzo(h)fluoranthono	2	2	2	Q	ND	QN	S
Bonzo (V) fluorenth and	Q	2	Q	S	ND	S	2
Denzu(n)inuolaninene	2	2	Ω	QN	ND	S	QN
Selic(a)pyrefile	2	Q	QN	DN	QN	Q	Q
Indono(4.9.9.5.4)	2	Q	Q	QN	QN	QN	Q.
niderio(1,2,3-cd/pyrene	Q	2	QN	QN	QN	S	CZ
Dibenz(a,n)anthracene	Q.	QN	QN	9	Q	QN	S
penzo(g,n,l)perylene	QN	QN	QN	Q	QN	Q	Q
Particulate/Vapor-phase SVOCs (Tentatively Ide	dentified Compounds)	(spunoc					
2-(2-quinolinyi)-(H-indene-1,3-(2H)-dione (a)	3.224E+02	QN	2.226F-02	1 602F-02	7 2895+00	0 40er 04	0 0 0 0 0
Benzanthrone (b)	CZ	Ç	Č.		00.3653.7	Z.120E-04	0.037E-02
Tetrachloroethana	9	2 !	2	Q.	QN	Q	2
(1.2-dichloroethyl) horzono	Q !	2	Q	Q	ND	QN	QN
A showing Oddin	Q	Q	Q	ND	QV	QN	Q
4-prierioxy-z(ות)-quinoiinone (a)	2	Ω	ND	QN	QN	2	Q
3-(prienyinydrazone)-1H-Indole-2,3-dione	Q	Q.	ND	QN	ND	Q	Q
4*1,4,4-oxadizaolin-3-one-2,5-diphenyi-delta	Q	Q	Q	Q	QV	2	ON.
z-amino-9,10-anthracenedione (a)	QN	ON	QN	Q	Q	ČN.	S
Footnotes: NO = Not Detected							
NEW = Net Explosive Weight							

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APPENDIX C

HEALTH-BASED SCREENING LEVELS AND ACUTE TOXICITY VALUES

			For the	For the Chronic Evaluation (HBSL)	luation (HB	SE)		For the	For the Acute Evaluation (ATV)	luation (A	(12)
	WITH MALL WILLS	#Region 194	E TOXICITY 6	*Region/3*	St Toxicity 3	**Health:hased	N. P. S.	45 C. A. L. S.	1000年の日本の日	PRINCE STATES	STATISTICAL PRINTERS
Compound to	CAS#	43546	Endpoline (closino)	RBG:	Endpoint (corno)	Screening Level	ERPG.	Teel!	XEGL (IIam)	Source (Tor E)	Value
TSP	12789-66-1	5.00E+01				5.00E+01	ΑN	NA	ΝΑ		
Ð	7647-01-0	2.08E+01	nc	2.08E+01	nc	2.08E+01	ΝA	4.47E+03	Ϋ́	⊢	4.47E+03
² D	7782-50-5	2.09E-01	nc	3.65E+02	nc	2.09E-01	2.89E+03	2.90E+03	2.90E+03	4	2.90E+03
Dioxin TEQ	1746-01-6	4.48E-08	ပ	4.17E-08	ပ	4.48E-08	NA	3.50E+00	Ϋ́Z	_	3.50E+00
Carbon Monoxide (CO)	630-08-0	1.57E+02		NA		1.57E+02	2.30E+05	2.28E+05	ΑN	ш	2.30E+05
Nitrogen Oxlde (NOx)	10024-97-2	1.00E+02		ΑN		1.00E+02	NA	2.70E+05	ΑN	_	2.70E+05
HCI (CEM System)	7647-01-0	2.08E+01	nc	2.08E+01	nc	2.08E+01	NA	4.47E+03	ΑN	⊥	4.47E+03
Carbon Dioxide (CO ₂)	124-38-9	Ϋ́		ΑN		NA	NA	5.40E+07	ΑN	⊩	5.40E+07
Sulfur Dioxide (SO ₂)	7446-09-5	8.00E+01		NA		8.00E+01	7.89E+02	7.86E+02	٧Z	ш	7.89E+02
Aluminum	7429-90-5	NA		3.65E+00	nc	3.65E+00	ΑN	3.00E+04	Ϋ́Z	L	3.00E+04
Antimony	7440-36-0	ΝA		1.46E+00	nc	1.46E+00	ΑN	1.50E+03	AN	⊢	1.50E+03
Arsenic	7440-38-2	4.47E-04	ပ	4.15E-04	υ	4.47E-04	Ϋ́	3.00E+01	Ϋ́	⊢	3.00E+01
Barlum	7440-39-3	5.21E-01	nc	5.11E-01	nc	5.21E-01	ΑN	1.50E+03	Ϋ́	F	1.50E+03
Berylllum	7440-41-7	8.00E-04	၁	7.45E-04	ပ	8.00E-04	Ϋ́	5.00E+00	Ϋ́	 -	5.00E+00
Cadmium	7440-43-9	1.07E-03	O	9.94E-04	C	1.07E-03	NA	3.00E+01	Ϋ́	⊢	3.00E+01
Chromium	7440-47-3	NA	၁	1.53E-04	ပ	1.53E-04	NA	1.50E+03	ΑN	F	1.50E+03
Cobalt	7440-48-4	AA		2.20E+02	nc	2.20E+02	NA	6.00E+01	ΝA	F	6.00E+01
Copper	7440-50-8	A A		1.46E+02	nc	1.46E+02	NA	3.00E+03	NA	⊢	3.00E+03
Lead	7439-92-1	1.50E+00		ΝΑ		1.50E+00	NA	1.50E+02	NA	Τ	1.50E+02
Magneslum	7439-95-4	ΑN		NA		NA	NA	3.00E+04	NA	⊥	3.00E+04
Manganese	7439-96-5	5.11E-02	nc	5.22E-02	nc	5.11E-02	NA	3.00E+03	ΝA	T	3.00E+03
Nickel	7440-02-0	NA		7.30E+01	nc	7.30E+01	NA	3.00E+03	ΑN	L	3.00E+03
Phosphorus	7723-14-0	ΑΝ		NA		NA	NA	3.00E+02	NA	_	3.00E+02
Selenium	7782-49-2	Ϋ́		1.83E+01	nc	1.83E+01	NA	6.00E+02	NA	⊢	6.00E+02
Silver	7740-22-4	AA		1.83E+01	DC.	1.83E+01	ΑN	3.00E+02	NA	⊢	3.00E+02
Thallium	7440-28-0	AA		2.56E-01	uc	2.56E-01	Ϋ́	3.00E+02	ΑN	Т	3.00E+02
Zinc	7440-66-6	NA		1.10E+03	S	1.10E+03	ΑA	3.00E+04	NA	_	3.00E+04
Mercury	7439-97-6	3.13E-01	nc	3.14E-01	ပ	3.13E-01	Ϋ́	1.00E+02	ΝA	⊢	1.00E+02
TNMHC		NA A		Ϋ́		NA	NA	NA	NA		
Ethane	74-84-0	NA		ΑN		NA	NA	NA	NA		
Ethylene	74-85-1	VAN		ΨZ		NA	NA	4.60E+05	NA	Т	4.60E+05
Acetylene	74-86-2	Y V		٧×		NA	NA	AN	NA		
Propane	74-98-6	NA NA		٧		NA	NA	3.78E+06	NA	T	3.78E+06
Propene	115-07-1	A'A		ΑN		AN	NA	NA	VAN		
- I-Butane	106-97-8	ΑN		ΔN		NA	NA	5.71E+06	NA	Τ	5.71E+06
l-Butene	25167-67-3	AN		ΑN		AN	Ϋ́	ΝΑ	NA		
1-Butene	106-98-9	A A		ΑN		NA	۷V	۷ V	ΥN		

			For the	For the Chronic Evaluation (HBSL)	luation (HB	SL)		For the	For the Acute Evaluation (ATV)	liuation (A	, LL
(Compound)	(c/S	rRegion 9 PRG 17 (La/m ²)	Toxicity Endpoint	Regions REC COM	Endbont (corho)	Screening Level.	ERPG		AEGL	Source	Acute Toxicity Valide
1,3-Butadiene	106-99-0	3.74E-03	o	3.48E-03			2.20E+04	2.21E+04	100	T 1	2 20E+04
n-Butane	106-97-8	NA		NA		AN	NA NA	5.71E+06	AN AN	1 -	5 71E+06
trans-2-Butene	624-64-6	A'N		NA		NA	A'A	Ϋ́	¥		20.11
2,2-Dimethylpropane	463-82-1	Ą		ΑA		NA	NA	Ϋ́	¥		
cis-2-Butene	590-18-1	¥.		AA		NA NA	NA	Ϋ́	Ϋ́		
3-Methyl-1-butene	563-45-1	ΑN		NA NA		NA	ΑN	ΑN	ΑN		
i-Pentane	109-66-0	NA		NA		ΑN	AN	1.80E+06	A'N	-	1.80F+06
1-Pentene	109-67-1	NA		۸A		ΝΑ	ΝA	ΑN	¥		
2-Methyl-1-butene	563-46-2	ΑN	·	۷A		NA	¥.	AZ.	¥		
n-Pentane	109-66-0	A'N		۷A		NA	¥	1.80E+06	¥	-	1.80F+06
Isoprene	78-79-5	NA		Ϋ́		NA	AN A	¥	ΑN		200
trans-2-Pentene	646-04-8	NA		ΑN		AN	NA A	ΑΝ	NA		
cis-2-Pentene	627-20-3	۸N		ΑN		NA	A'N	Ϋ́	AN		
2-Methyl-2-butene	513-35-9	ΝA		ΑN		NA	NA	Ϋ́	Υ _N		
2,2-Dimethylbutane	75-83-2	NA		٩N		NA	AA	1.80E+06	Ą	-	1 80F+06
Cyclopentene	142-29-0	ΑN		NA		NA	AN	ΑN	¥		
4-Methyl-1-pentene	691-37-2	Ϋ́		ΝA		NA	AN	ΑN	ΑN		
Cyclopentane	287-92-3	Ϋ́		ΝA		NA	ΑN	ΑN	ΑN		
2,3-Dimethylbutane	79-29-8	Υ Z		ΝA		NA	Ϋ́	Ϋ́	Ϋ́		
cis-4-Methyi-2-pentene	691-38-3	Ϋ́Α		A'N		NA	AN	NA A	ΑN		
2-Methylpentane	107-83-5	ΝA		NA		NA	ΑN	1.80E+06	A'N	-	1 80E+08
3-Methylpentane	96-14-0	NA		NA		AN	ΑN	ΑN	¥		20.700
2-Methyl-1-pentene	763-29-1	Ϋ́		NA		NA	ΑN	AA	¥		
1-Hexene	592-41-6	ΑN		Ϋ́		NA	NA	1.03E+05	ΑA	L	1.03E+05
п-нехапе	110-54-3	2.10E+02	ည	2.08E+02	JC	2.10E+02	NA	5.28E+05	NA	<u>_</u>	5.28E+05
Tans-Z-Hexene	4050-45-7	Y S		Y.		AN	¥	A A	NA		
Servicing Calc.	7500 24 2	X :		¥.		NA	ΑN	NA	۸		
Methylogophop	06 37 7	X < 2		¥ ×		NA.	ΨZ.	AN	ΑN		
Mothycopaniane	1-10-00	<u> </u>		NA.		NA	ΑN	A'N	NA A		
2,4-Uimethylpentane	108-08-7	NA		ΑN		ΑN	NA	۸A	NA		
Denzene	71-43-2	Z.50E-01	O	2.16E-01	O	2.50E-01	1.56E+05	1.60E+05	A'N	Е	1.56E+05
Cyclohexane	110-82-7	AN.		ΑA		NA	NA	3.10E+06	AN	-	3.10E+06
Z-Metnylnexane	591-76-4	A'N		ΑA		NA	ΝA	Y V	ΑN		
2,3-Dimethylpentane	565-59-3	₹ Z		¥.		NA	NA	ΥN	ΑN		
3-Metnylhexane	589-34-4	Ϋ́		¥		NA	ΑN	ΑN	ΨN		
Z,Z,4-1 nmetnyipentane	540-84-1	ΨZ.		Y A		۸A	NA	3.50E+05	AN	,_	3.50E+05
n-Heptane	142-82-5	Y.		ΑΝ		NA		1.80E+06	ΑN	-	1.80E+06
2,4,4-1 rimethyl-1-pentene	107-39-1	NA NA		ΑN		NA	NA	ĄN	AN		
							1			-	

			For the	For the Chronic Evaluation (HBSL)	luation (HE	(1SI)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	For the	Acute Ev	For the Acute Evaluation (ATV	TV)
		994		Red[6]) 3:	Toxicity					The state of the s	AcutesTexicity
The state of the s	6.50	PRG		(3 <u>=0</u>	Endpoint	Screening Level	ERPG		AEGL	Source	Value
		-	(conne)		(Compo)	V. (Irozm.)	(pg(m))-	(pg/h)	*(rg/m;);	(Tron E)	
Methylcyclohexane	108-87-2	3.10E+03	nc	3.14E+03	nc	3,10E+03	ΑN	4.81E+06	ΝΑ	1	4,81E+06
2,4,4-Trimethyl-2-pentene	107-40-4	NA		NA		NA	¥	Ϋ́	ΑN		
2,5-Dimethylhexane	592-13-2	NA		ΝΑ		AN	Ϋ́	ΑN	ΑN		
2,4-Dimethylhexane	589-43-5	NA		ΑN		Y.	Α	ΝA	ΑN		
2,3,4-Trimethylpentane	565-59-3	NA		NA		AN A	ΑN	Ϋ́	AA		
Toluene	108-88-3	4.02E+02	nc	4.16E+02	nc DC	4.02E+02	1.88E+05	1.8	AN	ш	1.88E+05
2,3-Dimethy/hexane	584-94-1	NA		ΑN		AN AN	¥	NA	NA NA		
2-Methylheptane	592-27-8	NA		Ϋ́		AA	¥	ΑN	¥		
3-Ethylhexane	619-99-8	NA		Ϋ́		ΑN	ΑĀ	¥	¥		
2,2-Dimethylheptane	1071-26-7	NA		ΑN		NA	¥	ΝA	AN		
2,2,4-Trimethylhexane	16747-26-5			NA		ΝΑ	Ϋ́	Ϋ́	ΑN		
n-Octane	111-65-9	NA		NA		NA	ΑN	٩N	ΑN		
Ethylcyclohexane	1678-91-7			NA		NA	Ϋ́	¥	ΑN		
Ethylbenzene	100-41-4	1.10E+03	nc	1.06E+03	nc	1.10E+03	ΑN	5.43E+05	¥.	F	5.43E+05
m-Xylene & p-Xylene	108-38-3	NA		ΝA		NA	Α̈́	6.51E+05	AN	1	6.51E+05
Styrene	100-42-5	1.10E+03	nc	1.04E+03	JC	1.10E+03	2.13E+05	2.13E+05	A A	ш	2.13E+05
o-Xylene	95-47-6	7.30E+02	nc	7.30E+03	nc	7.30E+02	NA	6.51E+05	ΑN	_	6.51E+05
n-Nonane	111-84-2	Ϋ́		4.02E+02	nc	4.02E+02	NA	1.05E+06	A'A	_	1.05E+06
i-Propylbenzene	98-82-8	4.00E+02	ဥ	4.02E+02	nc	4.00E+02	NA	7.37E+05	NA	-	7.37E+05
n-Propylbenzene	103-65-1	3.65E+01	ဥ	1.46E+02	nc	3.65E+01	۸	3.68E+05	ΑN	F	3.68E+05
p-Ethyltoluene	622-96-8	ΝA		NA		NA	ΝΑ	1.25E+05	ΑĀ	1	1.25E+05
m-Ethyltoluene	620-14-4	NA		NA		NA	Α	Ϋ́	AN		
1,3,5-Trimethylbenzene	108-67-8	6.20E+00	nc	6.21E+00	JU	6.20E+00	ΑN	3.68E+05	AN	-	3.68E+05
o-Ethyltoluene	611-14-3	NA		ΝA		NA	NA	7.50E+02	NA	۲	7.50E+02
1,2,4-Trimethylbenzene & sec-Butylbenzene	95-63-6	6.21E+00	nc	6.21E+00	nc	6.21E+00	AN	1.80E+05	ΑĀ	⊢	1.80E+05
n-Decane	124-18-5	Ϋ́		ΑN		NA	AN	4.37E+03	ΝA	F	4.37E+03
alpha-Pinene	80-26-8	ΑN		ΝA		NA	NA	4.00E+04	AN	T	4.00E+04
beta-Pinene	127-91-3			NA		NA	NA	NA	NA		
delta 3-Carene	13466-78-9	NA NA		NA		NA	NA	Ϋ́	ΑN		
d-Limonene	5989-27-5	_		NA		NA	ΝA	3.50E+05	ΑN	_	3.50E+05
MTBE	1634-04-4	_	ည	3.13E+03	nc	3.10E+03	A A	4.32E+05	Ą	⊥	4.32E+05
Dichlorodifluoromethane	75-71-8		nc	1.83E+02	20	2.10E+02	VΑ	1.48E+07	ΑN	F	1.48E+07
Methylchloride	74-87-33	1.07E+00	O	1.79E+00	၁	1.07E+00	VΑ	٧V	ΑN		
Dichlorotetrafluoroethane	374-07-2	Ϋ́		NA		NA	AN	Ϋ́	ΑN		
Chloroethene	75-01-4	2.20E-02	ပ	2.09E-02	၁	2.20E-02	AN	1.28E+04	A'N	-	1.28E+04
1,3-Butadlene	106-99-0	3.74E-03	ပ	3.48E-03	ပ	3.74E-03	2.20E+04	2.21E+04	AN	ш	2.20E+04
Methylbromide	74-83-9	5.20E+00	2	5.11E+00	υC	5.20E+00	AA	5.82E+04	NA	T	5.82E+04
Ethylchloride	75-00-3	2.30E+00	O	2.16E+00	O	2.30E+00	ΑN	7.92E+06	NA	1	7.92E+06

			For the	For the Chronic Evaluation (HBSI)	luation (HE	Selection of the select		14 + CB	Aprile Err	1	11.0
1000 1000 1000 1000 1000 1000 1000 100	W. N. C. S. P. Sales	W. Panland	TXVIXIAN	NC HAIN ON	T. C. C.		1000	10	LOI THE ACUTE EVALUATION (ATV	uation (/	41V)
Compound to the state of the st	# 0 2 1	PRG	Endpoint	Rec	Endboint	Screening Level	ERPG	TEEL TEEL	AEGL	Source	"Acute Toxicity.
Trichloromonofluoromethane	75-69-4	7.30F+02	DC C	7 30F+02	200		%(ββ/mε).%	s(pg/ms)s	(m/grl)	A (COVE)	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Vinylidene chloride	75-35-4	3 84E-02		2 58E 02	2	2 045 00	V 2	2.61E+U0	AN.	-	2.81E+06
Methylene chloride	75-09-2	4.10E+00	٥	3 795+00	ی اد	3.04E-02	RNA	7.92E+04	Y :	-	7.92E+04
Allyl chloride	107-05-1	1.04E+00	22	NA	,	1 045+00	0.905+03	0.946+03	Y S	1	6.96E+05
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	3.13E+04	2	3.14F+04	20	3 135+04	9.395403	9.595+03	Y X	1	9.39E+03
1,1-Dichloroethane	75-34-3	5.21E+02	2	5.11E+02	200	5.21F+02	2 2	4 24E+06	¥ < 2	-	9.58E+06
1,2-Dichloroethene	540-59-0	AN		3.29E+01) L	3.29E+01	47	2 385406	10A	-	1.21E+06
Chloroform	67-66-3	8.35E-02	O	7.73E-02	C	8.35E-02	AN	9 76F±03	NA TOTA	< -	5.30E+04
1,2-Dichloroethane	107-06-2	7.39E-02	U	6.88E-02	O	7.39E-02	AN	8 08F+03	Q Z	-	9.70E+03
Methylchloroform	71-55-6	1.04E+03	nc	2.30E+03	ПС	1.04E+03	1.94E+06	1.91E+06	Ž	- ш	1 94F+06
Вепzепе	71-43-2	2.49E-01	ပ	2.16E-01	ပ	2.49E-01	A'N	1.60E+05	ΑN	1	1 605+05
Carbontetrachloride	56-23-5	1.28E-01	nc	1.18E-01	nc	1.28E-01	1.28E+05	1.26E+05	Ϋ́	ш	1 28E+05
1,2-Dichloropropane	78-87-5	9.89E-02	ပ	9.21E-02	υ	9.89E-02	AN	5.08E+05	ž	1	5 08E+05
Irichloroethylene	79-01-6	1.12E+00	o	1.04E+00	ပ	1.12E+00	AN	5.37E+05	Y.	-	5.37F+05
cis 1,3-Dichloro-1-propene	10061-01-5	ΑΝ		NA		ΑN	AN AN	1.14E+04	¥	-	1.14F+04
trans 1,3-Dichloro-1-propene	10061-02-6	Ϋ́		NA		ΑN	ΑN	Ϋ́	AN A		
1,1,2-Trichloroethane	79-00-5	1.20E-01	ပ	1.12E-01	υ	1.20E-01	Ϋ́	1.64E+05	Ϋ́Z	F	1.64E+05
loluene	108-88-3	4.02E+02	၁	4.16E+02	nc	4.02E+02	1.88E+05	1.89E+05	ΑN	ш	1.88E+05
1,2-Uibromoethane	106-93-4	8.73E-03	O	8.24E-03	ပ	8.73E-03	NA	1.54E+05	ΑN	-	1.54E+05
Perchioroemylene	12/-18-4	3.31E+00	٥	3.13E+00	ပ	3.31E+00	6.89E+05	6.78E+05	Ϋ́	ш	6.89E+05
Chlorobenzene	108-90-7	6.20E+01	ဥ	6.21E+01	nc	6.20E+01	NA	1.38E+05	ΑN	-	1.38E+05
Ethylbenzene	100-41-4	1.06E+03	ဍ	1.06E+03	nc	1.06E+03	ΑN	5.43E+05	ΑN	-	5,43E+05
m&p-Xylene	108-38-3	7.30E+02	ဥ	X V		7.30E+02	NA	6.51E+05	ΑN	-	6.51E+05
4 4 2 2 Tetrockionethere	100-42-5	1.06E+03	ဥ	1.04E+03	nc	1.06E+03	2.13E+05	2.13E+05	AN	ш	2.13E+05
- Tritiane	79-34-0	3.37E-02	ပ	3.13E-02	٥	3.31E-02	Ϋ́	2.06E+04	NA	⊢	2.06E+04
C-Ethylphiana	90-44-08	7.30E+02	2	7.30E+03	2	7.30E+02	A V	6.51E+05	ΝΑ	⊢	6.51E+05
1.3.5-Trimethylbenzene	108 67 8	NA 8 24 E 400	3	AN CO		NA S	A N	1.25E+05	ΔA	⊢	1.25E+05
1.2.4.Trimethylbanzana	05.63.6	8 21 = 100	2 6	0.215+00	2	6.21E+00	Y.	3.68E+05	ΨN	-	3.68E+05
Renylchloride	400 44 7	3 065 03	2	0.21E+00	20	6.21E+00	ΨN	1.80E+05	Ϋ́	L	1.80E+05
m-Nichlorohanzana	544 72 4	3.305-02	2	3.58E-UZ	٥	3.96E-02	ន	5.17E+03	¥	ш	5.20E+03
onormodosoldos C. a	406 46 4	3.295+00	2	3.29E+00	20	3.29E+00		3.61E+04	ΝA	⊢	3.61E+04
BIJAZIJAGO DI O	100-40-7	3.00E-01	O	2.85E-01	O	3.06E-01		6.61E+05	NA	⊢	6.61E+05
4.2.4.74.74.74	1-00-08	Z.09E+0Z	ည	3.29E+01	ည	2.09E+02	AN	3.01E+05	۸N	1	3.01E+05
1,2,4-i richiorobenzene	120-82-1	2.08E+02	ဥ	2.08E+02	nc	2.08E+02	NA	3.71E+04	ΑN	-	3.71E+04
nexaciliolobutadiene	87-68-3	8.73E-02	O	8.03E-02	υ	8.73E-02	3.21E+04	3.20E+04	A'A	Ш	3.21E+04
Phenylacetylene	536-74-3	Ψ.		ΑN		NA	AN	ΝA	AN		
Metalinion	C-12-696C	Y.		ΑN		NA		3.50E+05	ΑN	F	3.50E+05
	024-91-9	AN		AN		AA	ΨN	NA	ΝA		

Corripounds	3		11.414.37	THE PERSON NAMED AND				Complete Name of Street	Total Lines and and		
Acetonitrile	CAS	924	Endoon	Keglon 3	Franch.	Screenin based:	200	431		Source	**AcutetToxicity
Acetonitrile	A CONTRACTOR		(LIO)	(#(/dg/m*) %	in(Colenc)	(******()g),	'(µg/m³);	(pg/m²)	(Lg/m²)	(T, 8, E)	
	75-05-8	6.20E+01	၁ပ	6.21E+01	วน	6.20E+01	NA		ΝA	7	1.01E+05
Acrylonitrile	107-13-1	2.80E-02	C	2.61E-02	၁	2.80E-02	2.20E+04	2.17E+04	ΑN	ш	2.20E+04
Nitromethane	75-52-5	AN		NA		NA	ΑN	1.50E+05	AN	-	1.50E+05
Benzonitrile	100-47-0	NA		NA		NA	ΑN	1.50E+04	ΥZ	-	1.50E+04
Nitrobenzene	98-95-3	2.09E+00	JC	2.19E+00	nc	2.09E+00	ΑN	1.51E+04	Ϋ́	F	1.51E+04
4-Methylbenzonitrile	104-85-8	AN		ΝA		NA	Ϋ́	Ϋ́	ΑN		
Carbon Disulfide	75-15-0	7.30E+02	nc	7.30E+02	ou u	7.30E+02	Ϋ́	3.73E+04	Ϋ́	-	3.73E+04
Thiophene	110-02-1	ΑN		ΝA		NA	ΑN	ΑN	ΑN		
Dimethyldisuifide	624-92-0	AN		ΝΑ		NA	4.00E+01	3.85E+01	ΑN	ш	4,00E+01
2-Methylthlophene	554-14-3	ΑN		ΑN		NA	ΨN	ΝΑ	ΑN		
3-Methylthiophene	616-44-4	ΑN		ΝA		NA	AN	ΑN	AN		
Dimethyltrisuifide	3658-80-8	ΑN		ΑN		NA	AN	ΑN	AN		
1-Chlorobutane	109-69-3	1.46E+03	nc	1.46E+03	ည	1.46E+03	ΑN	ΑN	ΑN		
	107-04-0	٧A		ΝA		NA	ΑN	ΑN	ΑZ		
2-Bromo-1-chloropropane	3017-95-6	ΑN		ΝA		NA	۸N	ΑN	ΑN		
1,2-Dichlorobutane	541-33-3	AN		NA		NA	۸A	Ϋ́			
1,2,3-Trichloropropane	96-18-4	9.61E-04	C	3.13E-03	ပ	9.61E-04	NA	1.81E+05		-	1.81E+05
1-Chloro-2-methylbenzene	95-49-8	7.30E+01	nc	7.30E+01	ou	7.30E+01	AN	3.88E+05	AN	⊢	3.88E+05
1-Chloro-3-methylbenzene	108-41-8	AN		NA		NA	NA	NA A			
1-Chloro-4-ethylbenzene	622-98-0	Ϋ́		NA		NA	NA	AN	ΑN		
Pentachloro-1-propene	1600-37-9	ΑN		NA		NA	NA	ΑN	Ϋ́		
	67-72-1	4.80E-01	ပ	4.47E-01	၁	4.80E-01	NA	2.90E+04	ΑN	i	2.90E+04
nzene	32768-54-0	Ϋ́		ΑĀ		NA	ΑN	ΑN	ΝΑ		
Carbonyl Sulfide	463-58-1	Ϋ́		ΑA		NA	A A	9.84E+03	٧N	Ţ	9.84E+03
	545-06-2	Ϋ́Z		ΝΑ		AA	٩	Ϋ́	NA		
	3018-12-0	Ϋ́		ΑA		NA	Ϋ́	ΑN	ΑN		
Isothiocyanatomethane	556-61-6	ΨN		Ϋ́		NA	ΑN	Ϋ́	Y Y		
1,1-Dichloro-2-propanone	513-88-2	ΨN		ΑĀ		ΝA	ΝA	ΑN	A A		
2-Thiophenecarboxaldehyde	98-03-3	Ϋ́		ΑN		NA	٧	AN	AN		
Acetaldehyde	75-07-0	8.73E-01	υ	8.13E-01	ပ	8.73E-01	1.80E+04	1.80E+04	NA	ш	1.80E+04
Ethanol	64-17-5	V V		ΑĀ		NA		_	AN	⊢	5.64E+06
Acrolein	107-02-8	2.09E-02	2	2.08E-02	nc	2.09E-02	2.30E+02	-	NA	ш	2.30E+02
Acetone	67-64-1	3.40E+02	၁	3.65E+02	ည	3.40E+02	NA	2.37E+06	AN	⊥	2.37E+06
Propanal	123-38-6	Ϋ́		¥		NA	۸N	7.50E+04	AN	⊢	7.50E+04
Furan	110-00-9	3.70E+00	ည	Y Y		3.70E+00	ΑN	1.67E+02	AN	1	1.67E+02
2-Propanol	67-63-0	ΑN		ΑĀ		NA	AN	9.84E+05	ΑN	⊢	9.84E+05
ein	78-85-3	AN		۷		NA	NA	NA	٧N		
MTBE	1634-04-4	3.10E+03	nc	3.13E+03	ည	3.10E+03	ΥN	4.32E+05	AN	F	4.32E+05

Scientific and the contract of			For the	For the Chronic Evaluation (HBSL)	luation (HE	(18		For the	For the Acute Evaluation (ATV)	aluation (/	TV.
		Region 9.		Region 3	Toxicity	M. Health-based			TA SAME IN	100 M	*Acute Toxicity
		(coms)		K (IO)	Endbolne (docno)	Screening Level	ERPG	TEEL	AEGL	Source	Value
6	78-94-4	NA		NA.		NA	AN	8.61E+01	3	T	HSH THE
2,3-Butanedione	625-34-3	NA V		NA		NA	¥	Ϋ́Z	NA NA		10.00
Butanal	123-72-8	ΑN		NA		NA	¥	7.38E+04	¥	-	7.38F+04
Z-Butanone	78-93-3	1.00E+03	JC	1.04E+03	ou	1.00E+03	ΝA	8.85E+05	Y.	_	8.85E+05
z-rwetnyiruran	534-22-5	AZ.		Ϋ́		NA	A A	Ϋ́	¥		
3-Methylfuran	930-27-8	Ϋ́		ΑĀ		AN	AN	ΑN	Ϋ́		
frans-2-Butenal	123-73-9	3.54E-03	၁	3.30E-03	ပ	3.54E-03	¥	ĄZ	¥Z		
Tetrahydrofuran	109-99-9	9.89E-01	ပ	9.21E-01	ပ	9.89E-01		7.38E+05	Ϋ́	-	7 385+05
3-Methyl-2-butanone	108-10-1	8.30E+01	nc	7.30E+01	nc	8.30E+01	¥	3.07E+05	NA NA	-	3 075+05
Acetic Acid	64-19-7	NA		Ϋ́		NA A	AN	3.68F+04	NA	-	3 68E±04
1-Butanol	71-36-3	3.65E+02	2	3.65E+02	nc	3.65E+02	Ž	1.52E+05	V V	- -	4 52E+04
1-Penten-3-one	1629-58-9	AN		AN		NA		NAN	Q V	-	1.325.103
2-Pentanone	107-87-9	ΝA		Ϋ́		NA	ΑN	R ROFFOR	VIV	1	90000
Pentanal	110-62-3	ΑN		Ϋ́		NA	NA	NA N		-	0.000
2.3-Pentanedione	600-14-6	ΑN		AN		NA NA	Y.	AN	VΝ		
1,2-Dichloro-2-methylpropane	594-37-6	Ϋ́		Ϋ́		AN	AN	ΔN	ΔV.		
3-Pentanone	96-22-0	ΝA		ΑN		NA NA	X	AN	Z A		
2.5-Dimethyifuran	625-86-5	NA		ΑN		AN	¥	ΑN	ΑN		
4-Methyl-2-pentanone	108-10-1	8.30E+01	JU	7.30E+01	nc	8.30E+01	¥	3.07E+05	AN	-	3 075+05
trans-3-Penten-2-one	3102-33-8	Ϋ́		ΑN		ΝΑ	¥	ΑN	AN		
Cyclopentanone	120-92-3	ΝA		ΑN		AN	Y.	ΑN	NA		
2-Hexanone	591-78-6	NA		5.11E+00	22	5.11E+00	Y.	4 09F+04	NA	-	A 00E±04
Hexanai	66-25-1	ΥN		NA.		NA	NA NA	AN	AN	-	1.036.104
3-Furaldehyde	498-60-2	AN		NA		AN	¥.	Υ _Z	Ž		
2-Cyclopenten-1-one	930-30-3	Y V		NA		AN	AA	Ϋ́Z	¥		
2-Furaldehyde	98-01-1	5.20E+01	nc	3.65E+01	nc	5.20E+01	NA	7.86E+03	¥	-	7.86E+03
1-Acetoxyacetone	592-20-1	ΨV		Ϋ́		NA	ΑN	ΑN	AN		
Z-Heptanone	110-43-0	Y.		¥		NA	NA	7.01E+05	Ϋ́	F	7.01E+05
Heptanai	66-25-1	ΑN		¥		NA	AN	ΑN	Ϋ́		
5-Methyl-2-furaldehyde	620-02-0	ΑN		Ϋ́		NA	A A	ΑN	¥		
Benzaldehyde	100-52-7	3.65E+02	пc	3.65E+02	nc	3.65E+02	AN	1.50E+04	ΔĀ	-	1 50F+04
Benzofuran	271-89-6	Ϋ́		NA		NA	NA	ΝΑ	ΑN		
Octanal	124-13-0	ΑN		AN		AN	AN	ΝA	Ϋ́		
Acetophenone	98-86-2	2.10E-02	2	2.08E-02	nc	2.10E-02	ΑN	3.00E+04	¥	-	3 OOF+04
Z-Nonanone	821-55-6	ΑΝ		٩		NA	ΑN	ΑN	¥		
Nonanal	124-19-6	ΑN		Ą		NA	¥	ΑN	¥		
in-initiosogimetnyiamine	65-75-9	1.40E-04	o	1.23E-04	υ	1.40E-04		2.50E+03	A A	-	2.50E+03
гулопе	110-86-1	3.65=+00	22	3.65E+00	nc	3.65E+00	ΑN	4.85E+04	Ϋ́Ν	-	4.85F+04
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			For the	For the Chronic Evaluation (HBSL)	Iluation (HB	SL)		For the	For the Acute Evaluation (ATV	luation (A	TV
Composite	(1976)	Region 94 PRG	III lod buji Kajo kortu	Region of Rec	Toxielty Endboint	S .	· ·	TEEL	AEGIL	Source	#AcutesToxicity#
2-Picoline	109-06-8	NA	Manual Ma	43	(A)(O)(D)(D)(B)	(m/grl)	(m/gr)	∦(μα/mː)∦	(m/gd/);	((ou)	(/////////////////////////////////////
Methyl methanesulfonate	66-27-3	NA V		N A		Y V	¥ X	Z Z	Z Z		
N-Nitrosomethylethylamine	10595-95-6	3.06E-04	ပ	2.85E-04	o	3.06E-04	ΑN	AN	ΑN		
N-Nitrosodiethylamine	55-18-5	4.47E-05	C	4.17E-05	၁	4.47E-05	ΑN	ΑN	Α̈́		
Ethyl methanesulfonate	62-50-0	ΑN		NA		NA	ΝA	AN	ΑN		
Phenol	108-95-2	2.19E+03	nc	2.19E+03	ou	2.19E+03	3.85E+05	3.85E+04	٩V	ш	3.85E+05
Aniline	62-53-3	Ϋ́		1.06E+00	nc	1.06E+00	AN	2.29E+04	3.00E+04	۷.	3.00E+04
bis(2-Chloroethyl)ether	111-44-4	5.80E-03	ပ	5.69E-03	၁	5.80E-03	NA	5.85E+04	ΝΑ	۲	5.85E+04
Pentachloroethane	76-01-7	AA		NA		NA	NA	3.00E+04	NA	<u> </u>	3.00E+04
2-Chlorophenol	95-57-8	1.83E+01	၁၁	1.83E+01	nc	1.83E+01	NA	5.25E+03	ΝA	-	5.25E+03
1,3-Dichlorobenzene	543-73-1	NA		NA		AN	ΑN	AN	Ϋ́		
1,4-Dichlorobenzene	106-46-7	2.80E-01	ပ	2.85E-01	ပ	2.80E-01	ΝA	6.61E+05	¥	_	6.61E+05
Benzyl alcohol	100-51-6	1.10E+03	nc	1.10E+03	nc	1.10E+03	Ϋ́	5.53E+04	Ϋ́Z	⊢	5.53E+04
2-Methylphenol	95-48-7	1.83E+02	nc	1.83E+02	uc	1.83E+02	ΑN	6.63E+04	ΑA	-	6.63E+04
1,2-Dichlorobenzene	95-50-1	2.09E+02	nc	3.29E+01	nc	2.09E+02	NA	3.01E+05	Ϋ́	-	3.01E+05
bis(2-Chloroisopropyl)ether	108-60-1	1.92E-01	C	1.79E-01	S	1.92E-01	ΑN	6.99E+04	Ϋ́	۲	6.99E+04
o-Toluidine	95-53-4	2.80E-02	၁	2.61E-02	ວ	2.80E-02	NA	2.63E+04	ΑN	-	2.63E+04
4-Methylphenol/3-Methylphenol	1319-77-3	1.83E+01	nc	1.83E+01	nc	1.83E+01	ΑN	6.63E+04	Ϋ́Z	۰	6.63E+04
N-Nitroso-di-n-propylamine	621-64-7	9.61E-04	C	8.94E-04	ບ	9.61E-04	NA	2.00E+02	Ϋ́	H	2.00E+02
Acetophenone	98-86-2	2.10E-02	ည	2.08E-02	ПC	2.10E-02	AN	3.00E+04	NA	_	3.00E+04
N-Nitrosomorpholine	59-89-2	NA		NA		NA	AN	3.00E+04	۸N	L	3.00E+04
N-Nitrosopyrrolidine	930-55-2	3.15E-03	ပ	2.98E-03	3	3.15E-03	NA	ΝA	ΑĀ		
Hexachloroethane	67-72-1	4.80E-01	C	4.47E-01	၁	4.80E-01	Ϋ́	2.90E+04	ΑN	1-	2.90E+04
Nitrobenzene	98-95-3	2.09E+00	nc	2.19E+00	uc	2.09E+00	Ϋ́	1.51E+04	ΑN	⊢	1.51E+04
N-Nitrosoplperidine	100-75-4	AA		NA		NA	NA	NA	ΑĀ		
Isophorone	78-59-1	7.08E+00	ပ	6.59E+00	ပ	7.08E+00	AN	2.83E+04	NA	F	2.83E+04
2,4-Dimethylphenol	105-67-9	7.30E+01	nc	7.30E+01	nc	7.30E+01	NA	. NA	NA		
2-Nitrophenol	88-75-5	ΝA		Ϋ́		NA	AN	ΝA	۸N		
bls(2-Chloroethoxy)methane	111-91-1	Ϋ́		Ϋ́		NA	ΑN	NA	NA		
Benzoic acid	65-85-0	1.50E+04	nc	1.46E+04	nc .	1.50E+04	AN	1.25E+04	NA	⊢	1.25E+04
2,4-Dichlorophenol	120-83-2	1.10E+01	nc	1.10E+01	nc	1.10E+01	AN	3.00E+04	Ϋ́	L	3.00E+04
1,2,4-Trichlorobenzene	120-82-1	2.08E+02	nc	2.08E+02	nc	2.08E+02	NA	3,71E+04	۷V	⊢	3.71E+04
Naphthalene	91-20-3	3.13E+00	nc	3.29E+00	nc	3.13E+00	ΑN	7.86E+04	۲X	-	7.86E+04
p-Chloroaniline	106-47-8	1.46E+01	nc	1.46E+01	nc	1.46E+01	AN	3.00E+04	Ϋ́	 -	3.00E+04
2,6-Dichlorophenol	87-65-0	NA		ΑN		AN	Ϋ́	3.00E+04	Ϋ́	L	3.00E+04
Hexachloropropene	1888-71-7	NA		ΝA		NA		ΑN	ΑN		
Hexachlorobutadiene	87-68-3	8.62E-02	ပ	8.03E-02	ပ	8.62E-02	F04	3.20E+04	A A A	ш	3.21E+04
Dimethylphenethylamine	122-09-8	3.65E+00	пC	NA		3.65E+00	ΝA	ΑN	Ϋ́		

			For the	For the Chronic Evaluation (HBSL)	luation (HE	(7 IS)	では多ななな	Forth	For the Acute Evaluation (ATV)	alitation (A	, L
		Region 9	MONIOR	Region 3s	Toxicity	操 Health-based %	2000	A STATE OF THE PARTY OF THE PAR	The second second	A STATE OF STATE OF	WACHINGTONICHE
	CAS	(((((((((((((((((((Endpoint (colland)	TABO.	Endbourt (Corne)	Screening Level	ERPG		AEGL	Source	Vaide
N-Nitroso-di-n-butylamine	924-16-3		ပ	1.12E-03	U	1.20E-03	NA	₹.	4	の一番大名の	ANGEN (HB/III)STATE
4-Chloro-3-methylphenol	35421-08-0			٩N		NA	¥.	Q Z	Q A		
Safrole	94-59-7	A'N		Ϋ́		NA	Ϋ́	Y AN	V V		
2-Methylnaphthalene	91-57-6	۷A		NA		NA	Ž	2.00F+04	AN	-	2005+04
1,2,4,5-Tetrachlorobenzene	95-94-3	1.10E+00	nc	1.10E+00	nc	1.10E+00	NA A	3.00E+04	ΑN	-	3.00E+04
Hexachlorocyclopentadiene	77-47-4	7.30E-02	20	7.30E-02	nc	7.30E-02	A A	2.23E+02	Ą		2 23E+02
2,4,6-1 richlorophenol	88-06-2	6.20E-01	O	6.26E-01	O	6.20E-01	AN	3.00E+04	¥	-	3.00F+04
Z,4,3-1 richiorophenol	95-95-4	3.65E+02	2	3.65E+02	nc	3.65E+02	Ν	3.00E+04	ΑN	-	3.00E+04
Isosarrole	120-58-1	Ϋ́		AN.		NA	A A	ΑN	ΑN		
Z-Cnioronaphthalene	91-58-7	2.92E+02	ဥ	2.92E+02	nc	2.92E+02	Ϋ́	6.00E+02	¥	F	6 00F+02
Z-Nitroaniine	88-74-4	2.09E-01	2	2.08E-01	nc	2.09E-01	¥	ΑN	AN		70.7000
1,4-Naphthoquinone	130-15-4	NA		NA		NA	ΑN	2.50E+02	Ž	-	2 50F±02
Dimethylphthalate	131-11-3	3.65E+04	ဥ	3.65E+04	nc	3.65E+04	Ϋ́	1.50E+04	Ϋ́	-	1 50E+04
1,3-Unitrobenzene	99-62-0	3.65E-01	2	3.65E-01	nc	3.65E-01	ΑN	3.00E+03	Ϋ́Z	-	3 00F+03
2,5-Unitrotoluene	606-20-2	3.65E+00	ဥ	3.65E+00	JC	3.65E+00	Ν	6.00E+02	ΑN	ļ.	6.00E+02
Acenaphtnylene	208-96-8	Ψ.		¥		NA	ΑN	2.00E+02	Ϋ́Z	-	2.00F+02
3-Niroaniine	2-03-66	V.		ΑN		NA	Ϋ́	ΑN	ΑN		
4-Nitrophenol	100-02-7	2.90E+01	2	2.92E+01	nc	2.90E+01	ΑN	3.00E+04	Ϋ́N	-	3.00F+04
Z,4-Uinitrophenol	51-28-5	7.30E+00	2	7.30E+00	nc	7.30E+00	Ą	7.50E+03	ΑΝ	,	7.50E+03
Acenaphthene	83-32-9	2.19E+02	nc	2.19E+02	nc	2.19E+02	ΑN	1.25E+03	¥	-	1 25E+03
2,4-Unitrotoluene	121-14-2	7.30E+00	JC	7.30E+00	nc	7.30E+00	ΑN	6.00E+02	₹ Z	-	6.00F+02
Ulbenzoluran	132-64-9	1.46E+01	nc	1.46E+01	nc	1.46E+01	ΑN	1.50E+00	ΑN	-	1 505+00
Pentachlorobenzene	608-93-5	2.92E+00	nc	2.92E+00	20	2.92E+00	ΑN	3.00E+04	Y Z	-	3 00E+04
1-Naphthylamine	134-32-7	ΝΑ		NA		NA	ΑN	3.50E+04	¥.		3 505+04
2-Naphthylamine	91-59-8	ΨN		ΑN		NA	AN	7.50E+03	ΑN	-	7 50E+03
z,3,4,5-1 etrachiorophenol	58-90-2	1.10E+02	ဥ	1.10E+02	nc	1.10E+02	ΑN	ΑN	AZ A		
7 Chleanhailthead	2005 70 0	2.92E+03	ဥ	2.92E+03	၁	2.92E+03	NA	1.50E+04	AN	-	1.50E+04
Charle in the control of the control	7.002-72-3	AN L		ΨV		NA	NA	ΑN	ΑN		
HINDING STREET	1-67-00	1.46E+02	ဥ	1.46E+02	ည	1.46E+02	NA	7.50E+04	ΑN	_	7.50E+04
טיוונים-טיווער	8-22-88	Z.00E-01	٥	1.90E-01	٥	2.00E-01	NA	ΑN	Ϋ́		
Allimponist-	0-10-001	Y.		A V		NA	NA	9.00E+03	ΑN	F	9.00E+03
oranimino-c,+	534-52-1	NA.		3.65E-01	nc	3.65E-01	NA	5.00E+02	Ϋ́Ν	-	5.00E+02
Diprienyiamine/in-NitrosouPA	6-67-79	1.37E-04	O	1.23E-04	ပ	1.37E-04	ΑN	2.50E+03	AN AN	-	2 50F+03
sym-i mittobenzene	99-35-4	1.10E+02	22	1.10E+02	ည	1.10E+02	NA	3.00E+04	ΑN	-	3.00E+04
District	2303-10-4	1.10E-01	o	ΨN		1.10E-01	NA	A'N	ΑN		
Phenacetin	62-44-2	¥Z.		ΑN		NA	NA NA	3.00E+04	₹ Z	-	3 00F+04
4-cromophenyipnenyi etner	101-55-3	AN.		۸N		NA	AN	AA	ΑΝ		
nexachiorobenzene	118-74-1	4.18E-03	٥	3.91E-03	ပ	4.18E-03	ΑN	7.50E+01	Ϋ́Z	-	7 50E+01
											10.700

			For the	For the Chronic Evaluation (HBSL)	luation (HB	SL)		For the	For the Acute Evaluation (ATV)	luation (A	TV)
Compounds	CAS	Region)97	Toxicity Endocint	Reploned	Manage 1	Screening Level	ERDG		A E C	Same	Acute Toxielly
		- New	Out		(colline)	5-5-5 (pg/m1)&:12	*(c#/gd)	(m/bd);	HT H		
4-Aminobiphenyl	92-67-1	NA		NA		AN	۸A	1.50E+03	ΑN	-	1,50E+03
Pronamide	23950-58-5	2.74E+02	nc	NA		2.74E+02	¥	¥	AN		
Pentachlorophenol	87-86-5	5.60E-02	ပ	5.22E-02	ပ	5.60E-02	¥	1,50E+03	Ϋ́	_	1.50E+03
Pentachloronitrobenzene	82-68-8	2.59E-02	၁	2.41E-02	υ	2.59E-02	Ϋ́	1.50E+03	ΑN	-	1.50E+03
Phenanthrene	85-01-8	Ϋ́		NA		NA	Ϋ́	2.00E+03	ΑN	F	2.00E+03
Anthracene	120-12-7	1.10E+03	nc	1.10E+03	ည	1.10E+03	Y.	6.00E+03	ΑN	F	6.00E+03
Carbazole	86-74-8	3.36E-01	၁	3.13E-01	υ	3.36E-01	¥	ΝA	AN.		
Di-n-butylphthalate	84-74-2	3.65E+02	nc	3.65E+02	nc	3.65E+02	Ϋ́	1.50E+04	ΑN	-	1,50E+04
4-Nitroquinoline-1-oxide	56-57-5	NA		۸A		NA	ΑN	Ϋ́	AN		
Methapyrilene	91-80-5	ΝΑ		NA		NA	ΑĀ	ΑN	ΑN		
Fluoranthene	206-44-0	1.46E+02	nc	1.46E+02	ည	1,46E+02	¥	3.00E+01	ΑN	-	3.00E+01
Benzidine	92-87-5	2.90E-05	၁	2.90E+00	ပ	2.90E-05	ΑĀ	5.00E+02	ΑN	-	5.00E+02
Pyrene	129-00-0	1.10E+02	nc	1.10E+02	nc	1.10E+02	ΑN	1.50E+04	AN	-	1.50E+04
p-Dimethylaminoazobenzene	60-11-7	NA		ΑN		Ν A	AN.	7.50E+04	ΑN	-	7.50E+04
Chlorobenzilate	510-15-6	2.49E-02	၁	2.32E-02	υ	2.49E-02	Ϋ́	2.50E+02	ΑN	1	2.50E+02
Kepone	143-50-0	3.74E-04	S	NA		3.74E-04	A'N	1.00E+02	ΑN	-	1.00E+02
Butylbenzylphthalate	85-68-7	7.30E+02	nc	7.30E+02	nc	7.30E+02	ΑN	5.00E+05	ΑN	F	5.00E+05
3,3'-Dimethylbenzidine	119-93-7	7.30E-04	ပ	6.81E-04	၁	7.30E-04	AA	3.00E+00	AN	F	3.00E+00
2-Acetylaminofluorene	53-96-3	NA V		NA		NA	ΝA	2.50E+03	Ϋ́	_	2.50E+03
bis(2-Ethylhexyt)phthalate	117-81-7	4.80E-01	ပ	4.47E-01	၁	4.80E-01	ΑN	1.00E+04	A'A	F	1.00E+04
3,3'-Dichlorobenzidine	91-94-1	1.50E-02	ပ	1.39E-02	ပ	1.50E-02	NA	6.21E+03	Ϋ́	_	6.21E+03
Benz(a)anthracene	56-55-3	2.17E-02	၁	8.58E-03	၁	2.17E-02	Ϋ́	6.00E+02	AN	⊢	6.00E+02
Chrysene	218-01-9	2.17E+00	ပ	8.58E-01	၁	2.17E+00	ΑĀ	2.00E+02	ΑN	⊢	2.00E+02
Di-n-octylphthalate	117-84-0	7.30E+01	nc	7.30E+01	nc	7.30E+01	۸A	1.50E+05	ΑN	,_	1.50E+05
7,12-Dimethylbenz(a)anthracene	57-97-6	Y Y		AA		NA	AN	ΑN	Ϋ́		
Benzo(b)fluoranthene	205-99-2	2.17E-02	ပ	8.58E-03	၁	2.17E-02	۷V	ΑN	AN		
Benzo(k)fluoranthene	207-08-9	2.17E-01	ပ	8.58E-02	၁	2.17E-01	ΝA	NA	ΑN		
Benz(a)pyrene	50-32-8	2.17E-03	ပ	2.02E-03	၁	2.17E-03	NA	7.50E+03	AN	_	7.50E+03
3-Methylcholanthrene	56-49-5	Ϋ́		AN		NA	ΥN	1.50E+03	ΑN	F	1.50E+03
Indeno(1,2,3-cd)pyrene	193-39-5	2.17E-02	O	8.58E-03	၁	2.17E-02	AN	۸N	۲ ۷		
Olbenz(a,h)anthracene	53-70-3	2.17E-03	O	8.58E-04	υ	2.17E-03	NA	3.00E+04	AN	Ŀ	3.00E+04
Benzo(g,h,l)perylene	191-24-2	A'N		Y Y		NA	NA	3.00E+04	۸N	-	3.00E+04
2-(2-quinolinyl)-(H)-indene-1,3-(2H)-dione		NA		Ϋ́		NA	ΑN	NA	NA		
Benzanthrone	82-05-3	A A		NA		NA	NA	AN	AN		
Tetrachloroethene	127-18-4	3,31E+00	υ	3.13E+00	၁	3.31E+00	AN	6.78E+05	Ϋ́	-	6.78E+05
(1,2-dichloroethyl)-benzene	1074-11-9	Ϋ́		NA		NA	Ν	NA	NA A		
4-phenoxy-2(1H)-quinolinone	66662-28-0	ΑN		Ϋ́Α		NA	NA	ΑN	ΑN		
3-(phenylhydrazone)-1H-Indole-2,3-dione		ΥN		NA		ΑN	ΑN	ΑN	ΑN		
									j		

Appendix C: Health-Based Screening Levels and Acute Toxicity Values

	1.00	For the	For the Chronic Evaluation (HBSL	aluation (HE	(TSI	10 A	For the	For the Acute Evaluation	A) notiente	2	
		No. of the last of	100000000000000000000000000000000000000						C) Indiana		
Compound	A PRG	OXIC DV		FIOXICITY S	Y Health: based y	5000				AcuterToxic	10.0
	が発生の必要	(cours)								onteX	
4-1,2,4-oxadizaolin-3-one-2,5-diphenyl-delta	ΑN		ΑN		NA	NA	NA	ALM ALM	· ·	Well Bulleting	**
2-amino-9, 10-anthracenedione 117-79-3	Ϋ́		AN AN		ĄN	AN	NAN	Q Z			
Footnotes:											T
PRG: Preliminary Remediation Goals										•	
c: Cancer											
nc:non-cancer											
RBC: Risk-Based Concentration			÷								
HBSL: Health-based Screening Level											
(E) ERPG: Emergency Response Planning Guidelines											
(T) TEEL: Temporary Emergency Exposure Limits			4							_	
ATV: Acute Toxicity Value											
NA: Not available											

APPENDIX D RISK EVALUATION DATA

Table D-1: Comparison of Air Concentrations With Health-Based Values: Metals, Particulates and Miscellaneous Compounds

Compound Cannel (ug/m²) Health-Based Cennent Cennent (ug/m²) Actue (ug/m²) Act				Gre	en Smo	Green Smoke Grenade			
TSP 168E+00 5.00E+01 3.35E-02 no 1.25E+03 NV Colt A	Compound	C _{chronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chrontc} / HBSL	> 12	C _{acute} (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	, t
Holie 1,51E-05 2,08E-01 3,59E-07 no 2,25E-02 447E+03 5,03E-06 Carbon Monoxide 1,57E-01 1,57E-02 3,96E-03 no 1,13E-02 2,90E-03 1,48E-05 Carbon Monoxide 1,57E-01 1,57E-02 1,53E-04 no 1,13E-02 2,90E-03 1,48E-07 Nitogen Oxide 1,57E-01 1,57E-02 1,53E-04 no 1,13E-02 2,90E-05 1,170E-05 Holie 1,07E-02 1,00E-02 1,53E-04 no 1,13E-02 2,90E-05 1,170E-05 Holie 1,07E-03 1,00E-04 1,22E-04 no 3,20E-01 4,47E-03 1,70E-05 Antimony	TSP	1.68E+00	5.00E+01	3.35E-02	01	1.26E+03	>2		60
Ciz (a) Ciz (b) 2.01E-05 2.08E-01 9.66E-05 no 1.51E-02 2.90E+03 5.21E-06 Carbon Monoxide 1.53E-11 4.48E-08 1.65E-03 no 1.61E-02 2.90E+01 3.51E-05 Niltogen Oxide 1.57E-03 1.00E+02 1.53E-03 1.00E+02 1.53E-04 no 1.66E-03 2.70E+05 1.70E-03 Niltogen Oxide 1.65E-03 1.00E+02 1.53E-04 no 1.66E+00 2.70E+05 1.70E-03 HCI (a) 1.07E-03 2.06E+01 5.12E-04 no 3.26E+00 2.70E+05 1.70E-03 Aluminum 1.07E-03 3.06E+01 2.71E-05 no 1.63E+00 3.06E+07 1.70E-03 Aluminum 1.20E-03 3.06E+01 2.71E-03 3.06E+01 3.06E+01 1.20E-04 1.20E-04 Aluminum 1.20E-04 1.20E-04 no 1.63E+00 3.00E+01 1.20E-04 Aluminum 1.20E-05 3.06E+01 3.36E+00 3.00E+01 1.20E-05 Alumin	HCI (a)	7.49E-06	2.08E+01	3.59E-07	no	2.25E-02	4.47E+03	5.03E-06	2
Discriment (a) 7.38E-11 4.48E-08 1.65E-03 no 5.18E-07 3.50E+06 1.48E-07 Authorida 1.57E-01 1.57E+02 3.97E-04 no 1.18E+02 2.30E+05 5.11E-04 Nirogen Oxide 1.07E-02 2.08E+01 5.12E-04 no 3.20E+01 4.7FE+03 1.77E-05 Carbon Dioxide 1.12E-03 8.00E+01 2.71E-03 8.00E+01 2.70E+01 7.77E-05 Authmony 1.07E-03 8.00E+01 2.71E-03 3.20E+01 7.06E+03 7.17E-05 Authmony NA 1.46E+00 3.28E-04 no 3.50E+01 7.0E-03 Authminum NA 4.47E-04 na NA 1.50E+03 1.20E-04 Authminum NA 4.47E-04 na NA 1.50E+03 1.20E-04 Authminum NA 4.47E-04 na NA 1.50E+03 1.20E-05 Bartin NA 1.07E-03 3.28E-04 na NA 1.50E+03 1.71E-05	Cl ₂ (a)	2.01E-05	2.09E-01	9.66E-05	no	1.51E-02	2.90E+03	5.21E-06	2
Carbon Monoxide 1,57E-01 1,57E-02 1,57E-04 1,57E-04 1,57E-04 1,7E-04 1,7E-04 1,7E-04 1,7E-04 1,7E-05 1,7E-05 <td>Dioxin TEQ (b)</td> <td>7.39E-11</td> <td>4.48E-08</td> <td>1.65E-03</td> <td>no</td> <td>5.18E-07</td> <td>3.50E+00</td> <td>1.48E-07</td> <td>2</td>	Dioxin TEQ (b)	7.39E-11	4.48E-08	1.65E-03	no	5.18E-07	3.50E+00	1.48E-07	2
Mitogan Oxide 153E-03 1.00E+02 1.53E-05 no 4.60E+00 2.70E+05 1.70E-05 HCI (a) 1.07E-02 2.08E+01 5.12E-04 no 3.20E+01 4.47E+03 1.70E-05 Garbon Dioxide 1.12E+03 8.00E+01 2.71E-05 no 1.60E+07 6.21E-05 2.06E-03 Aluminum 1.20E-03 8.00E+01 2.71E-05 no 1.60E+00 3.00E+07 1.70E-03 Aluminum 1.20E-03 3.60E+00 3.20E+01 7.01E-02 7.60E+02 7.60E+03 Arsenic NA 1.40E-05 no 3.60E+00 3.00E+04 1.20E-03 Assenic NA 4.48E-05 no 7.01E-02 3.00E+04 1.20E-03 Beryllium NA 1.07E-03 4.48E-05 no 7.01E-02 4.68E-05 Cadmium NA 1.07E-03 4.48E-05 no 7.01E-02 3.00E+01 Coppert 1.70E-03 1.32E-04 1.32E-04 1.32E-04 1.32E-04 1.32E-04 </td <td>Carbon Monoxide</td> <td>1.57E-01</td> <td>1.57E+02</td> <td>9.97E-04</td> <td>no</td> <td>1.18E+02</td> <td>2.30E+05</td> <td>5.11E-04</td> <td>2</td>	Carbon Monoxide	1.57E-01	1.57E+02	9.97E-04	no	1.18E+02	2.30E+05	5.11E-04	2
Carbon Loyle 1.07E-02 2.08E+01 5.12E-04 no 3.20E+01 4.47E+03 7.17E-03 Sulfur Dioxide 1.12E+00 NN 1.20E+03 3.65E+00 3.65E+03 5.40E+07 6.21E-05 Aluminum 1.20E-03 3.65E+00 3.28E-04 no 3.60E+03 2.06E-03 Aluminum 1.20E-03 3.65E+00 3.28E-04 no 3.60E+03 2.06E-03 Aluminum 1.20E-03 3.65E+00 3.28E-04 no 3.60E+03 1.20E-04 Ansenic NA 4.47E-04 na NA 1.50E-03 1.50E-04 Assenic NA 4.47E-04 na NA 1.50E-03 1.50E-04 Beryllum NA 1.07E-03 na NA 5.00E+03 1.50E-04 Cadmium NA 1.07E-03 1.75E-03 na NA 3.00E+01 1.20E-03 Chomium NA 1.07E-03 1.75E-03 na NA 3.00E+01 1.76E-03 Chapert <t< td=""><td>Nitrogen Oxide</td><td>1.53E-03</td><td>1.00E+02</td><td>1.53E-05</td><td>no</td><td>4.60E+00</td><td>2.70E+05</td><td>1.70E-05</td><td>2</td></t<>	Nitrogen Oxide	1.53E-03	1.00E+02	1.53E-05	no	4.60E+00	2.70E+05	1.70E-05	2
Carbon Dioxide 1,12E+00 NV na 3,35E+03 5,40E+07 6,21E-05 Sulfur Dioxide 2,17E-03 8,00E+01 2,71E-05 no 1,63E+00 7,89E+02 2,0EE-03 Authimory Authimory NA 1,46E+00 3,28E-04 no 1,63E+00 7,00E+04 1,20E-03 Asteric NA 1,46E+00 3,28E-04 no 7,01E-02 1,20E-04 1,20E-04 Bartium 2,34E-05 5,21E-01 4,48E-05 no 7,01E-02 1,50E+01 4,68E-05 Bartium 1,34E-05 5,21E-01 4,48E-05 no 7,01E-02 1,50E-03 4,68E-05 Cadmium NA 8,00E-04 1,07E-03 no 7,01E-02 1,50E-04 1,34E-04 Cobalt 2,59E-05 1,50E-03 1,22E-08 no 5,12E-02 3,00E+03 1,71E-05 Cobalt 2,59E-06 1,50E-02 1,77E-02 1,50E-03 3,00E+03 1,71E-05 Magnesium 4,51E-04 no <td< td=""><td>HCI (a)</td><td>1.07E-02</td><td>2.08E+01</td><td>5.12E-04</td><td>no</td><td>3.20E+01</td><td>4.47E+03</td><td>7.17E-03</td><td>ou</td></td<>	HCI (a)	1.07E-02	2.08E+01	5.12E-04	no	3.20E+01	4.47E+03	7.17E-03	ou
Sulfur Dioxide 2.17E-03 8.00E+01 2.71E-05 no 1.63E+00 7.89E+02 2.06E-03 Aluminum 1.20E-03 3.68E+00 3.28E-04 no 3.60E+00 3.00E+01 1.20E-04 Alvaminum NA 1.47E-04 na NA 1.50E+03 1.20E-04 Arsenic NA 4.47E-04 na NA 3.00E+01 1.20E-04 Barium 2.34E-05 5.21E-01 4.48E-05 na NA 3.00E+01 1.20E-05 Baryllum NA 1.07E-03 na NA 3.00E+01 1.50E-05 Cadmium NA 1.07E-03 na NA 3.00E+01 1.3E-04 Chromium NA 1.07E-03 1.22E-08 na NA 3.00E+01 1.3E-04 Chromium NA 1.07E-03 1.16E+02 1.16E+02 1.7E-02 3.00E+01 1.7E-04 Coppert 1.50E-04 1.05E-08 1.05E+01 1.05E+02 3.00E+02 3.00E+02 Lead<	Carbon Dioxide	1.12E+00	N<		na	3.35E+03	5.40E+07	6.21E-05	00
Aluminum 1.20E-03 3.65E+00 3.28E-04 no 3.60E+00 3.00E+04 1.20E-04 Antimony NA 1.46E+00 na NA 1.50E+03 1.20E-04 Arsenic NA 1.47E-04 na NA 3.00E+01 1.20E-05 Bartim 2.34E-05 5.21E-01 4.48E-05 no 7.01E-02 1.50E+03 4.68E-05 Baryllium NA 1.07E-03 no 7.01E-02 1.50E+03 4.68E-05 Cadmlum NA 1.07E-03 na NA 5.00E+00 3.87E-04 Cadmlum NA 1.07E-03 na NA 3.00E+01 1.34E-04 Choper 2.59E-06 2.20E+02 1.22E-08 no 8.06E-03 8.06E+03 1.71E-05 Lead 4.51E-04 1.50E+00 3.00E+02 1.71E-05 3.00E+02 1.71E-05 Magnesium 6.51E-04 1.36E-03 no 1.36E-03 3.00E+03 3.00E+03 Marganese 6.97E-05 <td< td=""><td>Sulfur Dioxide</td><td>2.17E-03</td><td>8.00E+01</td><td>2.71E-05</td><td>ou</td><td>1.63E+00</td><td>7.89E+02</td><td>2.06E-03</td><td>2</td></td<>	Sulfur Dioxide	2.17E-03	8.00E+01	2.71E-05	ou	1.63E+00	7.89E+02	2.06E-03	2
Antimony NA 1.46E+00 na NA 1.50E+03 Arsenic NA 4.47E-04 na NA 3.00E+01 Baryllum NA 6.21E-01 4.48E-05 no 7.01E-02 1.50E+03 4.68E-05 Beryllum NA 1.07E-03 no 7.01E-02 1.50E+01 4.68E-05 Cadmium NA 1.07E-03 no 7.01E-02 1.50E+01 1.30E-01 Chromium 8.29E-05 1.53E-04 5.43E-01 no 5.12E-02 3.00E+01 1.34E-04 Choper 1.70E-05 1.46E+02 1.72E-08 no 8.06E-03 6.06E+01 1.71E-05 Magnesium 6.51E-04 1.50E+02 1.70E-02 3.00E+02 1.71E-02 3.00E+03 3.00E+03 Magnesium 6.51E-04 1.50E+00 3.00E+02 3.00E+02 3.00E+02 3.00E+02 Magnesium 6.51E-04 1.35E+03 no 2.06E-01 3.00E+02 3.00E+02 Magnesium NA 1.83E	Aluminum	1.20E-03	3.65E+00	3.28E-04	ou	3.60E+00	3.00E+04	1.20E-04	ou
Asseric NA 4.47E-04 na NA 3.00E+01 Barlum 2.34E-05 5.21E-01 4.48E-05 no 7.01E-02 1.50E+03 4.68E-05 Beryllium NA 1.07E-03 na NA 5.00E+00 4.68E-05 Cadmium NA 1.07E-03 1.22E-08 na NA 3.00E+01 1.34E-04 Chromium 8.29E-05 1.50E-02 1.25E-08 na NA 3.00E+01 1.34E-04 Cobalt 2.69E-06 2.20E-02 1.72E-08 no 6.01E-01 1.34E-04 Lead 4.51E-04 1.50E+02 1.17E-07 no 5.12E-02 3.00E+03 9.02E-03 Magnesium 6.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 9.02E-03 Magnesium 6.51E-04 1.30E+01 1.35E+00 1.36E+01 3.00E+02 9.02E-03 Mickel 9.09E-05 7.30E+01 1.33E-03 no 2.91E-01 3.00E+02 Selenlum	Antimony	NA	1.46E+00		na	NA	1.50E+03		na
Barfulum 2.34E-05 5.21E-01 4.48E-05 no 7.01E-02 1.50E+03 4.68E-05 Beryllium NA 1.07E-03 na NA 5.00E+00 4.68E-05 Cadniulm NA 1.07E-03 na NA 3.00E+01 4.68E-05 Chlormlum 8.29E-05 1.53E-04 5.43E-01 no 5.81E-01 1.50E+03 3.0E+01 Cobalt 2.69E-06 2.20E+02 1.22E-08 no 8.06E-01 1.34E-04 Copper 1.70E-05 1.46E+02 1.17E-07 no 5.12E-02 3.00E+01 1.34E-04 Magnesium 6.51E-04 N. 1.50E+00 3.00E-04 6.51E-05 9.02E-03 Manganese 6.97E-05 5.11E-02 1.36E-04 N. 1.35E+00 3.00E+02 3.00E+02 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.09E-01 3.00E+02 3.00E+02 NA NA 1.65E-12 1.05E-05 3.00E+02 3.00E+02 3.00E+02 <td>Arsenic</td> <td>X A</td> <td>-4.47E-04</td> <td></td> <td>na</td> <td>ΝΑ</td> <td>3.00E+01</td> <td></td> <td>20</td>	Arsenic	X A	-4.47E-04		na	ΝΑ	3.00E+01		20
Beryllium NA 8.00E-04 na NA 5.00E+00 Cadmium NA 1.07E-03 na NA 5.00E+01 Chromium 8.29E-05 1.53E-04 5.43E-01 no 5.81E-01 1.50E+03 3.00E+01 Choalt 2.69E-06 2.20E+02 1.22E-08 no 5.0E-02 3.00E+01 1.34E-04 Copper 1.70E-05 1.46E+02 1.71E-07 no 5.12E-02 3.00E+02 1.71E-05 Magnesium 6.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 3.00E+02 Magnesium 6.51E-04 NV na 1.35E+00 3.00E+02 3.00E+02 Magnesium 6.51E-04 NV na 1.35E+00 3.00E+02 3.00E+02 Magnesium 6.51E-04 NV na 1.35E+00 3.00E+02 3.00E+02 Mickel 9.69E-05 7.30E+01 1.33E-01 1.07E-02 3.00E+02 3.00E+02 Silver 3.55E-12 1.83E+01 </td <td>Barium</td> <td>2.34E-05</td> <td>5.21E-01</td> <td>4.48E-05</td> <td>ou</td> <td>7.01E-02</td> <td>1.50E+03</td> <td>4.68E-05</td> <td>2</td>	Barium	2.34E-05	5.21E-01	4.48E-05	ou	7.01E-02	1.50E+03	4.68E-05	2
Cadmium NA 1.07E-03 na NA 3.00E+01 Chromium 8.29E-05 1.53E-04 5.43E-01 no 5.81E-01 1.50E+03 3.87E-04 Cobalt 2.69E-06 2.20E+02 1.22E-08 no 8.06E-03 6.00E+01 1.34E-04 Copper 1.70E-05 1.46E+02 1.17E-07 no 5.12E-02 3.00E+02 1.71E-05 Magnesium 6.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 3.00E+02 Magnesium 6.51E-04 NV na 1.95E+00 3.00E+02 9.02E-03 Magnesium 6.51E-04 NV na 1.95E+00 3.00E+02 9.02E-03 Magnesium 6.97E-04 1.33E-01 1.33E-03 na 1.05E+02 3.00E+02 Magnesium NA 1.83E+01 1.35E-03 na 1.07E-02 3.00E+02 9.02E-03 MA NA 2.56E-01 1.02E-08 na 1.76E-02 3.00E+02 3.00E+02 <t< td=""><td>Beryllium</td><td>NA</td><td>8.00E-04</td><td></td><td>na</td><td>NA</td><td>5.00E+00</td><td></td><td>E</td></t<>	Beryllium	NA	8.00E-04		na	NA	5.00E+00		E
Chromium 8.29E-05 1.53E-04 5.43E-01 no 5.81E-01 1.50E+03 3.87E-04 Cobalt 2.69E-06 2.20E+02 1.22E-08 no 8.06E+03 6.00E+01 1.34E-04 Copper 1.70E-05 1.46E+02 1.17E-07 no 5.12E-02 3.00E+03 1.71E-05 Lead 4.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 9.02E-03 Magnesium 6.51E-04 NV na 1.95E+00 3.00E+02 6.51E-05 Magnesium 6.51E-04 NV na 1.95E+00 3.00E+02 6.51E-05 Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+02 6.51E-05 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.09E-01 3.00E+03 6.70E-05 Phosphorus NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 1.10E+03 1.02E-08 <td>Cadmium</td> <td>NA</td> <td>1.07E-03</td> <td></td> <td>na</td> <td>NA</td> <td>3.00E+01</td> <td></td> <td>ec</td>	Cadmium	NA	1.07E-03		na	NA	3.00E+01		ec
Cobalt 2.69E-06 2.20E+02 1.22E-08 no 8.06E-03 6.00E+01 1.34E-04 Copper 1.70E-05 1.46E+02 1.17E-07 no 5.12E-02 3.00E+03 1.71E-05 Lead 4.51E-04 1.50E+00 3.00E+02 3.00E+02 1.71E-05 Magneslum 6.51E-04 NV na 1.95E+00 1.50E+02 9.02E-03 Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+02 6.1E-05 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.09E-01 3.00E+02 6.08E-05 Phosphorus NA 1.83E+01 1.33E-06 no 2.91E-01 3.00E+02 3.00E+05 Silver 3.55E-12 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.00E+02 Zinc 1.12E-05 1.10E+03 1.02E-08 no 1.76E-02 3.00E+02 3.00E+02	Chromium	8.29E-05	1.53E-04	5.43E-01	92	5.81E-01	1.50E+03	3.87E-04	00
Copper 1.70E-05 1.46E+02 1.17E-07 no 5.12E-02 3.00E+03 1.71E-05 Lead 4.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 9.02E-03 Magneslum 6.51E-04 NV na 1.95E+00 3.00E+02 9.02E-03 Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+02 6.51E-05 Nickel 9.69E-05 7.30E+01 1.33E-01 3.00E+03 9.70E-05 9.70E-05 Phosphorus NA 1.83E+01 1.35E-01 3.00E+02 3.00E+02 9.70E-05 Selenium NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thaillium NA 2.56E-01 na NA 3.00E+02 3.56E-05 Zinc 1.12E-05 1.10E+03 1.02E-08 no 1.76E-02 3.00E+02 1.76E-06	Cobalt	2.69E-06	2.20E+02	1.22E-08	Ou	8.06E-03	6.00E+01	1.34E-04	2
Lead 4.51E-04 1.50E+00 3.00E-04 no 1.35E+00 1.50E+02 9.02E-03 Magneslum 6.51E-04 NV na 1.95E+00 3.00E+04 6.51E-05 Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+04 6.51E-05 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.09E-01 3.00E+03 6.98E-05 Phosphorus NA 1.83E+01 na NA 3.00E+02 3.70E-05 Selenium NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 Thallium NA 2.56E-10 1.95E-13 no 1.07E-02 3.00E+02 Amercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.76E-06	Copper	1.70E-05	1.46E+02	1.17E-07	2	5.12E-02	3.00E+03	1.71E-05	2
Magnesium 6.51E-04 NV na 1.95E+00 3.00E+04 6.51E-05 Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+03 6.51E-05 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.91E-01 3.00E+03 9.70E-05 Phosphorus NA 1.83E+01 na NA 3.00E+02 9.70E-05 Selenium NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 1.02E-08 no 1.07E-02 3.00E+02 3.56E-05 Alic 3.13E-01 1.87E-13 no 1.76E-04 1.76E-06	Lead	4.51E-04	1.50E+00	3.00E-04	no	1.35E+00	1.50E+02	9.02E-03	2
Manganese 6.97E-05 5.11E-02 1.36E-03 no 2.09E-01 3.00E+03 6.98E-05 Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.91E-01 3.00E+03 9.70E-05 Phosphorus NA 1.83E+01 na NA 3.00E+02 9.70E-05 Selenium NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 1.02E-08 no 1.07E-02 3.00E+02 3.56E-05 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.76E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.76E-06	Magnesium	6.51E-04	≥		na	1.95E+00	3.00E+04	6.51E-05	2
Nickel 9.69E-05 7.30E+01 1.33E-06 no 2.91E-01 3.00E+03 9.70E-05 Phosphorus NA NA 3.00E+02 9.70E-05 Selenium NA 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thaillum NA 2.56E-01 no 1.02E-08 no 3.37E-02 3.00E+02 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.76E-06	Manganese	6.97E-05	5.11E-02	1.36E-03	no	2.09E-01	3.00E+03	6.98E-05	2
Phosphorus NA NV na NA 3.00E+02 R Selenium NA 1.83E+01 1.95E-13 na NA 6.00E+02 R Silver 3.55E-12 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 na NA 3.00E+02 3.56E-05 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Nickel	9.69E-05	7.30E+01	1.33E-06	no	2.91E-01	3.00E+03	9.70E-05	02
Selenium NA 1.83E+01 na NA 6.00E+02 SiGE-02 Silver 3.55E-12 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 na NA 3.00E+02 3.56E-05 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Phosphorus	ΑΝ	2		na	NA	3.00E+02		na
Silver 3.55E-12 1.83E+01 1.95E-13 no 1.07E-02 3.00E+02 3.56E-05 Thallium NA 2.56E-01 na NA 3.00E+02 3.56E-05 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Selenium	ΝΑ	1.83E+01		na	AA	6.00E+02		na
Thallium NA 2.56E-01 na NA 3.00E+02 Zinc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Silver	3.55E-12	1.83E+01	1.95E-13	ou	1.07E-02	3.00E+02	3.56E-05	00
Linc 1.12E-05 1.10E+03 1.02E-08 no 3.37E-02 3.00E+04 1.12E-06 Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Thailium	NA	2.56E-01		na	NA	3.00E+02		na
Mercury 5.85E-14 3.13E-01 1.87E-13 no 1.76E-04 1.00E+02 1.76E-06	Zinc	1.12E-05	1.10E+03	1.02E-08	DO.	3.37E-02	3.00E+04	1.12E-06	92
		5.85E-14	3.13E-01	1.87E-13	no	1.76E-04	1.00E+02	1.76E-06	ou

(a) HCI/Cl₂ levels were too low to be reliably measured.

(b) Presence questionable - reported at similar levels in samples and blanks.

NA = Not applicable because compound was not detected.

na = Not available because health-based screening value is not available or not applicable if compound was not detected.

NV = No value

Cchronic = Chronic time-averaged concentration; HBSL = Chronic health-based screening level

Sacute = Acute concentration; ATV = Acute toxicity value

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

			Green	n Smoke	ke Grenade			
Compound (a)	C _{chronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 12	Cacute (µg/m³)	Acute Toxicity Value (µg/m³)	Gacute/ ATV	> 1?
Total Nonmethane Hydrocarbons (TNMHC)	AHC)							
TNMHC	2.79E-02	N		na	2.09E+01	>N		6
Volatile Organic Compounds (VOCs)								5
Ethane	6.14E-04	N		Па	4.61E-01	N.		2
Ethylene	9.67E-04	2		na	2.90E+00	4 60F+05	6 31E-08	<u> </u>
Acetylene	9.00E-04	N N		na	6.76E-01	N/	20.5	2 2
Propane	1.42E-04	NN		na	4.27E-01	3.78E+06	1.13E-07	2
Propene	7.85E-04	N/		na	5.90E-01	N		na
i-Butane	4.88E-06	NV		na	1.47E-02	5.71E+06	2.57E-09	2
i-Butene	1.36E-04	NV	ŕ	na	1.02E-01	N		na L
1-Butene	1.19E-04	N		na	8.93E-02	N		na
1,3-Butadiene	1.03E-04	3.74E-03	2.75E-02	2	1.80E-01	2.20E+04	8.19E-06	20
n-Butane	2.74E-05	>N		na	8.23E-02	5.71E+06	1.44E-08	2
trans-2-Butene	1.15E-04	≥		na	8.62E-02	N		na
Z,Z-Uimethyipropane	NA	N		na	NA	N		na
cis-2-Butene	5.92E-05	N		na	4.45E-02	N		na
3-Methyl-1-butene	5.86E-06	N		na	4.40E-03	>2		na
i-Pentane	NA AA	N		na	NA	1.80E+06		na
1-Pentene	2.06E-05	≷		na	1.55E-02	NV		na
Z-Metnyl-1-butene	3.39E-05	N		na	2.55E-02	N		na
n-rentane	A'A	2		na	NA	1.80E+06		na
Isoprene	5.57E-05	N		na	4.18E-02	N.		na
trans-2-Pentene	1.57E-05	N		na	1.18E-02	>N		na
cis-2-Pentene	8.24E-06	N		na	6.19E-03	≥N		na
2-Methyl-2-butene	2.43E-05	N		na	1.82E-02	Ş		na
z,z-Umethylbutane	1.81E-05	N		na	5.43E-02	1.80E+06	3.02E-08	2
Cyclopentene	¥N:	N		na	NA	N		na
4-ivietnyi-1-pentene	ΨZ «	2	·	na	N A	N		na
Cyclopentane	Y.	N/S		na	NA	N.		na

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

				ome na	Green Smoke Grenade			
Compound (a)	С _{сhronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 12	C _{acute} (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	> 12
2,3-Dimethylbutane	AN	NV		na	ĄN	N.		na
cis-4-Methyl-2-pentene	NA	\N		na	NA	N		e
2-Methylpentane	NA	NV		na	AN	1.80E+06		na Pu
3-Methylpentane	NA	N		na	ΑΝ	N N		ec
2-Methyl-1-pentene	NA	NV		na	AN	N		ec
1-Hexene	2.03E-05	NV		na	6.08E-02	1.03E+05	5.90E-07	2
n-Hexane	1.08E-05	2.10E+02	5.15E-08	00	3.25E-02	5.28E+05	6.15E-08	92
trans-2-Hexene	NA	N		na	NA	N		na
2-Methyl-2-pentene	ΑΝ	N		na	NA	N<		na
cis-2-Hexene	NA	N<		na	AN	NV		na
Methylcyclopentane	AN A	2		na	AN	N		a
2,4-Dimethylpentane	NA	N	*	na	AN	N		na
Benzene	1.85E-03	2.50E-01 ·	7.41E-03	no	3.24E+00	1.56E+05	2.08E-05	2
Cyclohexane	NA	>N		na	NA	3.10E+06		na
2-Methylhexane	NA	N		na	AA	N		na
2,3-Dimethylpentane	NA	Ş		na	AN	N N		na
3-Methylhexane	NA	N N		na	NA	N		na
2,2,4-Trimethylpentane	AN A	N		na	AN	3.50E+05		БГ
n-Heptane	AN A	≥ N		na	NA	1.80E+06		na
2,4,4-Trimethyl-1-pentene	AN	N		na	NA	N N		na
Methylcyclohexane	AN A	3.10E+03		na	NA	4.81E+06		na
2,4,4-Trimethyl-2-pentene	AN	N N		na	NA	N N		na
2,5-Dimethylhexane	¥N.	N N		na	NA	N		na
2,4-Dimethylhexane	NA	N		na	AN	N		na
2,3,4-Trimethylpentane	NA A	N		na	NA	N		na
Toluene	3.72E-03	4.02E+02	9.25E-06	ou	2.79E+00	1.88E+05	1.49E-05	2
2,3-Dimethylhexane	AN	N		na	NA	N		na
2-Methylheptane	AN	>N		na	ΑN	N		na
3-Ethylhexane	AN	N		na	NA	N		na
2,2-Dimethylheptane	Δ× Z	2		20	AN	N10.		

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

Cehronic (µg/m³) NA NA NA 1.05E-05 5.47E-05 4.59E-04 4.60E-05 5.82E-05 NA NA NA NA NA NA NA NA NA N	9						
NA NA 4.59E-04 4.60E-05 5.82E-05 5.82E-05 5.82E-05 NA NA NA NA NA NA NA NA NA NA	Screening Level (µg/m³)	C _{chronlc} / HBSL	> 12	Cacute (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	× 12
NA	N		eg.	ΦN	MIX		
NA 4.59E-05 4.59E-05 5.82E-05 NA NA NA NA NA NA NA NA NA NA	N		na	AN			ag :
NA N	≥ N		na	AN AN	2		eu s
NA N	1.10E+03	4.98E-08	2	1.64E-01	5.43F+05	3 03E-07	2 2
NA N	N<		na	1.38E+00	6.51E+05	2.12E-06	
NA NA NA NA NA NA NA NA NA NA NA NA NA N	1.10E+03	4.19E-08	2	3.46E-02	2.13E+05	1.62E-07	2 2
NA N)E+02	7.98E-08	ou	1.75E-01	6.51E+05	2.69E-07	2
NA NA NA NA NA NA NA NA NA NA NA NA NA N	2E+02		na	ΑN	1.05E+06		E
NA NA NA NA NA NA NA NA NA NA NA NA NA N)E+02		na	ΑN	7.37E+05		2
NA	5E+01		na	ΑN	3.68E+05		5 6
NA NA NA NA NA NA NA NA NA NA NA NA NA N	>N		na	NA NA	1.25F+05		2 2
NA NA NA NA NA NA NA NA NA NA NA NA NA N	>2		na	NA NA	N N		2 2
NA NA NA NA NA NA NA NA NA NA NA NA NA N	6.20E+00		na	AN AN	3 685+05		<u>a</u>
NA NA NA NA NA NA NA NA NA NA NA NA NA N	≩		na	ĄN	7.50E+02		. Ja
NA NA NA NA NA NA NA NA NA NA NA NA NA N	C+00						<u>a</u>
NA NA NA NA NA NA NA NA NA NA NA NA NA N	E+00		na	NA V	1.80E+05		na
NA NA NA NA NA NA 1.05E-04 NA	≥		na	NA	4.37E+03		na na
NA NA NA NA NA 1.05E-04 NA	≥		na	NA	4.00E+04		2
NA NA NA NA NA 3.79E-06 1.05E-04 NA	≥		na	NA	N		6
NA NA NA NA 1.05E-04 NA	≥		na	NA A	N		na
NA NA NA NA 3.79E-06 1.05E-04 NA	≥		na	NA	3.50E+05		na
NA NA NA 3.79E-06 1.05E-04 NA	E+03		na	AA	4.32E+05		na L
NA NA 3.79E-06 1.05E-04 NA	E+02		na	AN	1.48E+07		Da
3.79E-06 1.05E-04 NA	E+00		na	ΑN	>N		e C
3.79E-06 1.05E-04 NA	1		na	AN	N N		na
1.05E-04 NA	1	1.72E-04	no	2.66E-02	1.28E+04	2.08E-06	2
ZA		2.80E-02	, OL	1.83E-01	2.20E+04	8.32E-06	2
	1		na	NA	5.82E+04		na
2.18E-06		9.46E-07	00	1.52E-02	7.92E+06	1.93E-09	90
3.90E-07 7.30E+02		5.34E-10	ou	1.17E-03	2.81E+06	4.17E-10	2

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

			Gree	n Smo	Green Smoke Grenade			
Compound (a)	С _{сhronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 1?	С _{асиtе} (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	> 12
Vinylidenechloride	1.92E-06	5.26E+08	3.66E-15	no	1.35E-02	7.92E+04	1.70E-07	2
Methylenechloride	2.32E-04	4.10E+00	5.65E-05	no	4.06E-01	6.96E+05	5.83E-07	2
Allylchloride	NA	1.04E+00		na	ΑN	9.39E+03		na
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	3.13E+04		na	X V	9.58E+06		na
1,1-Dichloroethane	NA	5.21E+02		na	Ϋ́	1.21E+06		na
1,2-Dichloroethene	NA	3.29E+01		na	ΑN	5.30E+04		na
Chloroform	5.52E-05	8.35E-02	6.61E-04	no	3.87E-01	9.76E+03	3.97E-05	2
1,2-Dichloroethane	NA	7.39E-02		na	ΑN	8.08E+03		na
Methylchloroform	NA	1.04E+03		na	ΑN	1.94E+06		na
Benzene	1.88E-03	2.49E-01	7.56E-03	no	1.32E+01	1.60E+05	8.27E-05	92
Carbontetrachloride	2.28E-06	1.28E-01	1.78E-05	OU	1.72E-03	1.28E+05	1.34E-08	2
1,2-Dichloropropane	NA	9.89E-02		na	AN	5.08E+05		na
Trichloroethylene	5.93E-05	1.12E+00	5.29E-05	10	4.15E-01	5.37E+05	7.73E-07	2
cis 1,3-Dichloro-1-propene	NA	^N		na	NA	1.14E+04		na
trans 1,3-Dichloro-1-propene	NA	N		na	NA	N/		na
1,1,2-Trichloroethane	NA	1.20E-01		na	AN	1.64E+05		na
Toluene	3.78E-03	4.02E+02	9.41E-06	no	2.84E+00	1.88E+05	1.51E-05	2
1,2-Dibromoethane	NA	8.73E-03		na	ΑN	1.54E+05		na
Perchloroethylene	2.89E-06	3.31E+00	8.73E-07	no	5.07E-03	6.89E+05	7.35E-09	2
Chlorobenzene	8.90E-05	6.20E+01	1.43E-06	no	2.67E-01	1.38E+05	1.94E-06	2
Ethylbenzene	8.40E-05	1.06E+03	7.94E-08	no	2.52E-01	5.43E+05	4.65E-07	2
m&p-Xylene	\sim	7.30E+02	6.39E-07	no	1.40E+00	6.51E+05	2.15E-06	on
Styrene	NA	1.06E+03		na	NA	2.13E+05		na
1,1,2,2-Tetrachloroethane	NA	3.31E-02		na	AN	2.06E+04		na
o-Xylene	5.10E-05	7.30E+02	6.98E-08	no	1.53E-01	6.51E+05	2.35E-07	2
p-Ethyltoluene	NA A	N		na	AN	1.25E+05		na
1,3,5-Trimethylbenzene	NA A	6.21E+00		na	NA	3.68E+05		na
1,2,4-Trimethylbenzene	NA	6.21E+00		na	NA NA	1.80E+05		na
Benzylchloride	NA NA	3.96E-02		na	ΝΑ	5.20E+03		па
m-Dichlorobenzene	2.59E-06	3.29E+00	7.89E-07	2	7.78E-03	3.61E+04	2.16E-07	ou

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

			ē.5	en Smo	Green Smoke Grenade			
Compound (a)	С _{еhronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronlc} / HBSL	> 12	C _{acute} (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	× 12
p-Dichlorobenzene	2.80E-06	3.06E-01	9.16E-06	202	1.96E-02	6.61E+05	2 97E_08	2
o-Dichlorobenzene	3.80E-05	2.09E+02	1.82E-07	ou	1.14E-01	3.01E+05	3.80F-07	2 2
1,2,4-Trichlorobenzene	4.29E-06	2.08E+02	2.06E-08	ou	1.29E-02	3.71E+04	3.47E-07	2
Hexachlorobutadiene	1.81E-05	8.73E-02	2.08E-04	on O	3.18E-02	3.21E+04	9.90E-07	2 2
Phenylacetylene	4.06E-05	N N		na	3.05E-02	N		2 2
d-Limonene	NA	N N		na	NA	3.50E+05		na L
Methylnitrite	NA	N/		na	NA	N		E
Acetonitrile	9.13E-05	6.20E+01	1.47E-06	no	2.74E-01	1.01E+05	2.72E-06	2
Acrylonitrile	5.71E-06	2.80E-02	2.04E-04	no	1.00E-02	2.20E+04	4.55E-07	2
Nitromethane	5.64E-06	N N		па	1.69E-02	1.50E+05	1.13E-07	2
Benzonitrile	4.62E-04	N		na	1.39E+00	1.50E+04	9.25E-05	2
Nitrobenzene	ΑΝ	2.09E+00		na	N.	1.51E+04		na
4-Methylbenzonitrile	1.13E-04	N		na	8.48E-02	N		na
Carbon Disulfide	5.50E-04	7.30E+02	7.53E-07	OU	1.65E+00	3.73E+04	4.42E-05	2
Iniophene	8.04E-05	N		na	6.04E-02	N.		na
Dimetnyldisulfide	NA	2		na	AN	4.00E+01		na
Z-Methylthiophene	NA	N		na	AN	N		na
iophene	NA	N		na	AN	N N		na
Dimethyltrisulfide	NA	N		na	NA	N		na
1-Chlorobutane	AN	1.46E+03		na	NA	>N		na
1-Bromo-2-chloroethane	NA	N		na	NA	N		na
2-Bromo-1-chloropropane	A'A	N		na	ΑN	N		na
1,2-Dichlorobutane	NA	N N		na	٩V	N		E C
1,2,3-Trichloropropane	NA	9.61E-04		па	Ϋ́	1.81E+05		2
1-Chloro-2-methylbenzene	NA	7.30E+01		na	ΝΑ	3.88E+05		80
1-Chloro-3-methylbenzene	NA	N		na	NA A	N		62
1-Chloro-4-ethylbenzene	NA	N		na	ΝΑ	N		60
Pentachloro-1-propene	AN	N<		na	NA	N		2
Hexachioroethane	AN.	4.80E-01		na	NA	2.90E+04		na
1, 2-Uichioro-3-methylbenzene	¥Z	≥		2	SZ	1 17 4		

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

			Gree	en Smol	Green Smoke Grenade			
Compound (a)	С _{сhronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronle} / HBSL	> 12	C _{acute} (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	> 12
Carbonyl Sulfide	NA	N N		na	ĄN	9.84E+03		na
Trichloroacetonitrile	NA	NV		na	Å	2		na
Dichloroacetonitrile	NA	ΛN		na	ΑN	₽		na
Isothiocyanatomethane	NA	ΛN		na	ΑΝ	N		na
1,1-Dichloro-2-propanone	5.90E-05	N		na	4.43E-02	2		na
2-Thiophenecarboxaldehyde	3.41E-05	N		na	2.56E-02	2		na
Acetaldehyde	1.94E-03	8.73E-01	2.22E-03	no	3.39E+00	1.80E+04	1.88E-04	on On
Ethanol	6.05E-05	>N		na	1.82E-01	5.64E+06	3.22E-08	on O
Acrolein	1.12E-03	2.09E-02	5.37E-02	no	8.40E-01	2.30E+02	3.65E-03	0L
Acetone	7.58E-03	3.40E+02	2.23E-05	no	2.28E+01	2.37E+06	9.61E-06	2
Propanal	6.04E-04	N		na	1.81E+00	7.50E+04	2.42E-05	2
Furan	1.36E-04	3.70E+00	3.68E-05	<u>و</u>	4.09E-01	1.67E+02	2.45E-03	on On
2-Propanol	1.66E-04	≥		na	5.00E-01	9.84E+05	5.08E-07	02
Methacrolein	2.98E-04	N		na	2.24E-01	N		na
MTBE	1.21E-05	3.10E+03	3.92E-09	no	3.65E-02	4.32E+05	8.44E-08	2
Methyl-vinyl ketone	4.80E-04	N		na	1.44E+00	8.61E+01	1.67E-02	2
2,3-Butanedione	1.44E-03	N		na	1.08E+00	N		na
Butanal	6.66E-05	N		na	2.00E-01	7.38E+04	2.71E-06	2
2-Butanone	1.95E-03	1.00E+03	1.95E-06	ou	5.87E+00	8.85E+05	6.63E-06	2
2-Methyifuran	2.22E-04	N		na	1.66E-01	N		na
3-Methylfuran	3.97E-05	N		na	2.98E-02	>N		na
trans-2-Butenal	1.60E-04	3.54E-03	4.52E-02	no	2.80E-01	N N		na
Tetrahydrofuran	NA	9.89E-01		na	NA	7.38E+05		na
3-Methyl-2-butanone	6.75E-05	8.30E+01	8.13E-07	no	2.03E-01	3.07E+05	6.61E-07	2
Acetic Acid	2.43E-04	N		na	7.30E-01	3.68E+04	1.99E-05	2
1-Butanol	NA	3.65E+02		na	NA	1.52E+05		na
1-Penten-3-one	1.74E-04	2		na	1.30E-01	N/		na
2-Pentanone	1.50E-04	2		na	4.50E-01	8.80E+05	5.12E-07	2
Pentana	NA	2		na	NA	NV		na
2.3-Pentanedione	4.47E-04	N	·	па	3.35E-01	N		na

Table D-2: Comparison of Air Concentrations With Health-Based Values: Volatile Organic Compounds

			Gree	n Smol	Green Smoke Grenade			
Compound (a)	C _{chronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 12	Cacute (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	× 12
1,2-Dichloro-2-methylpropane	NA	N N		na	AN	2		na L
3-Pentanone	7.76E-05	N\		na	5.82E-02	2		na
2.5-Dimethylfuran	2.04E-04	N		na	1.53E-01	Ž		na
4-Methyl-2-pentanone	NA V	8.30E+01		na	ΑΝ	3.07E+05		na
trans-3-Penten-2-one	1.10E-04	N		na	8.29E-02	≥ N		na
Cyclopentanone	1.04E-04	N\		na	7.78E-02	N		na
2-Hexanone	1.92E-05	5.11E+00	3.76E-06	92	5.77E-02	4.09E+04	1.41E-06	2
Hexanal	2.97E-05	N/		na	2.23E-02	ş		Ba
3-Furaldehyde	2.60E-04	NV		na	1.95E-01	Ş		na
2-Cyclopenten-1-one	NA	NV		na	ΑN	N N		na
2-Furaldehyde	1.58E-03	5.20E+01	3.03E-05	no	4.74E+00	7.86E+03	6.03E-04	2
1-Acetoxyacetone	7.86E-04	NV		na	5.90E-01	N .		na
2-Heptanone	3.83E-06	NV	,	na	1.15E-02	7.01E+05	1.64E-08	00
Heptanal	1.38E-05	N/S		กล	1.04E-02	N		na
5-Methyl-2-furaldehyde	5.16E-04	N N		na	3.88E-01	N		na
Benzaldehyde	3.07E-04	3.65E+02	8.41E-07	2	9.22E-01	1.50E+04	6.15E-05	OL
Benzofuran	1.02E-04	N/		na	7.68E-02	2		na
Octanal	2.52E-05	N		na	1.89E-02	≥N		na
Acetophenone	1.50E-04	ΛN		na	4.52E-01	3.00E+04	1.51E-05	92
2-Nonanone	NA	AN .		na	A'N	2		na
Nonanal	3.81E-05	N		na	2.86E-02	N		na
Ootpotos.								

Footnotes:

(a) Items in bold represent duplicate values for those compounds that are common for Method TO-14 and TO-12.

NA = Not applicable

na = Not available because health-based screening value is not available or not applicable because compound was not detected.

NV = No value

Cchronic = Chronic time-averaged concentration

HBSL = Chronic health-based screening level

Cacute = Acute concentration

ATV = Acute toxicity value

Table D-3: Comparison of Air Concentrations With Health-Based Values: Semi-Volatile Organic Compounds

			Gree	en Smo	Green Smoke Grenade	e		
Compound	C _{chronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 1?	C _{acute} (µg/m³)	Acute Toxicity Value (μg/m³)	Cacute/ ATV	> 12
Particulate/Vapor-phase SVOCs								
N-Nitrosodimethylamine	NA	1.40E-04		na	NA	2.50E+03		na
Pyridine	NA	3.65E+00		na	NA A	4.85E+04		Па
2-Picoline	NA	N/		па	NA	2		20
Methyl methanesulfonate	AN	N		na	NA	2		2 2
N-Nitrosomethylethylamine	NA	3.06E-04		na	AN	≥N		na Da
N-Nitrosodiethylamine	NA	4.47E-05		na	NA	N		na
Ethyl methanesulfonate	NA	NV		na	AN	N		na
Phenol	NA	2.19E+03		na	AN	3.85E+05		na
Aniline	NA	1.06E+00		na	NA	3.00E+04		na
bis(2-Chloroethyl)ether	NA	5.80E-03		na	AN	5.85E+04		na
Pentachloroethane	NA	NV		na	NA A	3.00E+04		na
2-Chlorophenol	NA NA	1.83E+01		na	AN	5,25E+03		na
1,3-Dichlorobenzene	A N	NV		na	AN	2		na
1,4-Dichlorobenzene	ΑN	2.80E-01		na	NA	6.61E+05		na
Benzyl alcohol	NA	1.10E+03		na	NA	5.53E+04		na
2-Methylphenol	Ϋ́	1.83E+02		na	NA	6.63E+04		na
1,2-Dichlorobenzene	NA	2.09E+02		na	NA	3.01E+05		na
bis(2-Chloroisopropyl)ether	NA	1.92E-01		na	· NA	6.99E+04		na
o-loinidine	Y N	2.80E-02		na	NA	2.63E+04		na
4-iwetnyipnenol/3-Methyipnenol	NA.	1.83E+01		na	MA	6.63E+04		na
N-INITIOSO-GI-n-propylamine	¥.	9.61E-04		na	NA	2.00E+02		na
Acetophenone	AN .	2.10E-02		na	AN	3.00E+04		na
N-Nitrosomorpholine	Y N	NN N		na	NA	3.00E+04		na
N-Nitrosopyrrolidine	AN	3.15E-03		na	NA	^N		na
Hexachloroethane	AN.	4.80E-01		na	NA	2.90E+04		na
Nitrobenzene	AN.	2.09E+00		na	NA	1.51E+04		na
N-Nitrosopiperidine	ΑN	N		na	AN	N.		na
Isophorone	AN	7.08E+00		na	NA	2.83E+04		na
2,4-Umethylphenol	AN.	7.30E+01		na	NA	ΛN		na
Z-Nitrophenol	NA:	N		na	NA	۸N		na
us(z-Cniordetnoxy)metnane	NA	N/		na	ΥZ	NV		na

Table D-3: Comparison of Air Concentrations With Health-Based Values: Semi-Volatile Organic Compounds

	2		Gree	en Smo	Green Smoke Grenade	Je		
Compound	C _{chronic} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 12	C _{acute} (µg/m³)	Acute Toxicity Value (μg/m³)	Cacute/ ATV	v .
Benzoic acid	Ϋ́	1.50E+04		a c	VIV	4 0511.04		
2,4-Dichlorophenol	ΑN	1.10E+01		5 5	2 2	1.25E+04		na
1,2,4-Trichlorobenzene	NA	2 08F+02		0 0	(\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	3.00E+04		na
Naphthalene	NA NA	3 13F+00		0	¥ .	3.71E+04		na
p-Chloroaniline	NA NA	1 46F+01		2	Y S	7.86E+04		na
2,6-Dichlorophenol	Y.	N .		200	¥ ×	3.00E+04		na
Hexachloropropene	X X	>N		B 0	¥ ×	3.00E+04		na
Hexachlorobutadiene	NA	8 ROE OO		<u>a</u>	Y.	N		na
Dimethylphenethylamine	ΔN	3 655+00		na L	NA.	3.21E+04		na
N-Nitroso-di-n-butvlamine	C AZ	3.00E+00		na	V.	N		na
4-Chloro-3-methylphenol		1.405-03		па	NA	. NV		na
Safrole	2 2	N/		na	NA NA	N.		na
2-Methylnaphthalene		NA.		na	Υ V	NV		na
1.2.4.5-Tetrachlorobenzene	V < V	N .		na	NA NA	2.00E+04		na
Hexachlorocyclonentadiene	2 4	1.10E+00		na	Ϋ́	3.00E+04		na
2.4.6-Trichlorophenol	V	7.30E-02		na	NA	2.23E+02		na
2.4.5-Trichlorophanol		0.20E-01		na	NA	3.00E+04		na
Isosafola		3.00=+02		na	AN	3.00E+04		na
2-Chloronanhthalene	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	VN 0000		Ba	Ϋ́	NV		na
2-Nitropolitoe	2 2	Z.9ZE+UZ		В	NA V	6.00E+02		na
1 4-Nanhthoduinona	2 2	Z.USE-01		na	ΑΝ	N\		na
Dimethylphthalate		NV NV		na	ΨN	2.50E+02		na
1.3-Dinitrobenzene		3.000=104		na	NA	1.50E+04		na
2 6-Dinitrotolillene		3.65E-01		na	ΝΑ	3.00E+03		na
Acenanthylene	2 2	3.00=+00		na	Ϋ́	6.00E+02		na
3-Nitrophilipe	¥ \$	N		na	NA	2.00E+02		na
4-Nitrodoon	42	NV S		na	۸A	N .		na
2 4-Dinitrophenol	42	Z.90E+01		na	NA	3.00E+04		na
Acenarhthene	XX.	7.30E+00		na	NA	7.50E+03		na
2 4-Dinitrotolione	¥ 5	2.19E+02		na	NA	1.25E+03		29
Dibenzofinan	Z S	7.30E+00		na	NA	6.00E+02		na
Pentachlorohenzene	2 2	1.40E+01		na	ΝΑ	1.50E+00		na
	2	Z.3ZE+UU		na	₹ Z	3.00E+04		a C

Table D-3: Comparison of Air Concentrations With Health-Based Values: Semi-Volatile Organic Compounds

			Gree	en Smo	Green Smoke Grenade	de		
Compound	C _{chronte} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronic} / HBSL	> 12	Cacute (µg/m³)	Acute Toxicity Value (μg/m³)	Cacute/ ATV	> 12
1-Naphthylamine	A A	Ž		na	ΑΝ	3.50E+04		eu
2-Naphthylamine	AN	N		na	AM	7.50E+03		na
2,3,4,6-Tetrachlorophenol	AN	1.10E+02		na	Ϋ́	N<		na
Diethyfphthalate	A A	2.92E+03		na	NA	1.50E+04		na
4-Chlorophenylphenyl ether	A A	N		na	AN	N		na
Fluorene	ΑN	1.46E+02		na	NA	7.50E+04		na
5-Nitro-o-toluidine	ΑN	2.00E-01		na	AN	N.		na
4-Nitroaniline	ΑΝ	N		na	ΑΝ	9.00E+03		na
4,6-Dinitro-2-methylphenol	NA	3.65E-01		na	ΑN	5.00E+02		па
Diphenylamine/N-NitrosoDPA	۸N	1.37E-04		na	Ϋ́	2.50E+03		na
sym-Trinitrobenzene	NA	1.10E+02		na	Ϋ́	3.00E+04		na
Diallate	NA	1.10E-01		na	Ϋ́	N N		na
Phenacetin	ΑN	NV		na	ΑN	3.00E+04		na
4-Bromophenylphenyl ether	NA	NN		na	Ϋ́	N/		na
Hexachlorobenzene	NA	4.18E-03		na	NA	7.50E+01		na
4-Aminobiphenyl	NA NA	N		na	AN	1.50E+03		na
Pronamide	ΑN	2.74E+02		na	AN	N		na
Pentachlorophenol	Ϋ́	5.60E-02		ua	NA	1.50E+03		na
Pentachloronitrobenzene	Ϋ́	2.59E-02		na	NA	1.50E+03		na
Phenanthrene	AA	≥		na	NA	2.00E+03		na
Anthracene	A A	1.10E+03		na	NA	6.00E+03		na
Carbazole	∀ Z	3.36E-01		na	NA	N<		na
Di-n-butylphthalate	Y Y	3.65E+02		na	AN	1.50E+04		na
4-Nitroquinoline-1-oxide	Y Y	N		na	AN	N<		na
Methapyrilene	AN	NV		na	ΑN	≥N		na
Fluoranthene	AN	1.46E+02		na	Ϋ́	3.00E+01		na
Benzidine	NA	2.90E-05		na	Ϋ́	5.00E+02		па
Pyrene	NA	1.10E+02		na	Ϋ́	1.50E+04		na
p-Dimethylaminoazobenzene	NA	NV		na	Ϋ́	7.50E+04		na
Chlorobenzilate	ΑΝ	2.49E-02		na	NA	2.50E+02		na
Kepone	NA	3.74E-04		na	NA	1.00E+02		na
Butylbenzylphthalate	Y Y	7.30E+02		na	AN	5.00E+05		na

Table D-3: Comparison of Air Concentrations With Health-Based Values: Semi-Volatile Organic Compounds

			Gree	n Smo	Green Smoke Grenade	9		
Compound	C _{chronle} (µg/m³)	Health-Based Screening Level (µg/m³)	C _{chronle} / HBSL	> 12	Cacute (µg/m³)	Acute Toxicity Value (µg/m³)	Cacute/ ATV	> 12
3,3'-Dimethylbenzidine	NA	7.30E-04		na	ĄN	3.00E+00		9
2-Acetylaminofluorene	Ϋ́	N		na	ΑN	2 50E+03		E S
bis(2-Ethylhexyl)phthalate	NA	4.80E-01		na	AN	1 00E+04		E S
3,3'-Dichlorobenzidine	NA	1.50E-02		na	NA A	6.21E+03		2 2
Benz(a)anthracene	NA	2.17E-02		na	X.	6.00E+02		0 0
Chrysene	NA	2.17E+00		na	NA	2.00E+02		2 6
Di-n-octylphthalate	NA	7.30E+01		na	AA	1.50E+05		0 0
7,12-Dimethylbenz(a)anthracene	NA	N/		Па	NA	N		2 2
Benzo(b)fluoranthene	NA	2.17E-02		na	NA	2		2 2
Benzo(k)fluoranthene	NA	2.17E-01		na	AA	≥		2 2
Benz(a)pyrene	NA	2.17E-03		na	A'A	7.50E+03		3 6
3-Methylcholanthrene	NA	N N		na	NA A	1.50E+03		2 2
Indeno(1,2,3-cd)pyrene	NA	2.17E-02		na	X.	>N		2 0
Dibenz(a,h)anthracene	NA	2.17E-03		na	AN	3.00E+04		5 6
Benzo(g,h,i)perylene	NA	^N		na	AN	3.00E+04		2 2
2-(2-quinolinyl)-(H-indene-1,3-(2H)-dione	2.12E-01	^N		na	1.59E+02	N		2 2
Benzanthrone	NA	>		na	AN	≥N		60
Tetrachloroethene	NA	3.31E+00		na	Ϋ́Z	6.78E+05		2 0
(1,2-dichloroethyl)-benzene	AN	N		na	AZ AZ	2		2 0
4-phenoxy-2(1H)-quinolinone	ΑN	N.		na	ĄZ	2		3 6
3-(phenylhydrazone)-1H-Indole-2,3-dione	Ν	2		na	Y.	Ž.		2 2
4-1,2,4-oxadizaolin-3-one-2,5-diphenyl-delta	AN	≥		na	A Z	ÀN.		
2-amino-9,10-anthracenedione	Ϋ́Α	≥N		na	AN	2		2 0
ootnotes:								D _

NA = Not applicable

na = Not available because health-based screening value is not available or not applicable because compound was not detected.

NV = No value C_{chronic} = Chronic time-averaged concentration

HBSL = Chronic health-based screening level

Cacute = Acute concentration

ATV = Acute toxicity value

Table D-4: Comparison of Air Concentrations With Health-Based Values: Total Petroleum Hydrocarbons

Compound (a)	С _{сhronic} (µg/m³)	C _{chronic} (µg/m³)	C _{chronic} (µg/m³)	С _{енгоніс} (µg/m³)
	Aliphatic:C<=8	Aliphatic:C>8	Aromatic:C<=8	Aromatic:C>8
Propane	1.42E-04	NA	NA	AN
Propene	7.85E-04	ΝΑ	NA	NA
i-Butane	4.88E-06	NAN	NA	AN
i-Butene	1.36E-04	N A A	AN AN	AN
1-Butene	1.19E-04	NA	NA	NA AN
n-Butane	2.74E-05	NA	NA	NA
trans-2-Butene	1.15E-04	ΑN	AN	AN
cis-2-Butene	5.92E-05	NA	NA	NA
. 3-Methyl-1-butene	5.86E-06	NA	NA	NA
1-Pentene	2.06E-05	NA	AN	NA AN
2-Methyl-1-butene	3.39E-05	AN .	NA	NA
trans-2-Pentene	1.57E-05	ΑN	NA	AN
cis-2-Pentene	8.24E-06	NA	NA.	NA
2-Methyl-2-butene	2.43E-05	AN	NA	AN
2,2-Dimethylbutane	1.81E-05	NA	NA	AN
1-Hexene	2.03E-05	NA	NA	NA
n-Hexane	1.08E-05	NA	AN	NA
Benzene	NA	NA	4.32E-03	NA
Toluene	NA	NA	3.72E-03	AN
Ethylbenzene	AN	NA	5.47E-05	NA
m-Xylene & p-Xylene	AN	NA	4.59E-04	AN
Styrene	AN	NA	AA	4.60E-05
o-Xylene	AN .	NA	5.82E-05	NA
Benzene	AN	NA	4.39E-03	AN
Toluene	AN	NA	3.78E-03	NA
Ethylbenzene	ΝΑ	NA	8.40E-05	NA

Table D-4: Comparison of Air Concentrations With Health-Based Values: Total Petroleum Hydrocarbons

		Green Smoke Grenade	ke Grenade	
Compound (a)	С _{сhronic} (µg/m³)	С _{сһгопіс} (µg/m³)	С _{сьгопіс} (µg/m³)	С _{сhronic} (µg/m³)
	Aliphatic:C<=8	Aliphatic:C>8	Aromatic:C<=8	Aromatic:C>8
m&p-Xylene	NA	NA	4.67E-04	NA
o-Xylene	NA	NA	5.10E-05	AN
Phenylacetylene	NA	NA	4.06E-05	NA
Total (µg/m³)	1.55E-03	0.00E+00	8.21E-03	6.09E-04
Derived Health-Based Screening Level	1.92E+04	1.04E+03	4.17E+02	2.09E+02
C _{chronic} /HBSL	8.06E-08	0.00E+00	1.97E-05	2.92E-06
>1?	ou	92	ou	92
Footnotes:				

(a) Items in bold represent duplicate values: highest concentration was used to estimate total petroleum hydrocarbon concentration

>1? = Is the ratio greater than one?

NA = Not Applicable because compound was not detected

Cohronic = chronic averaged air Concentration

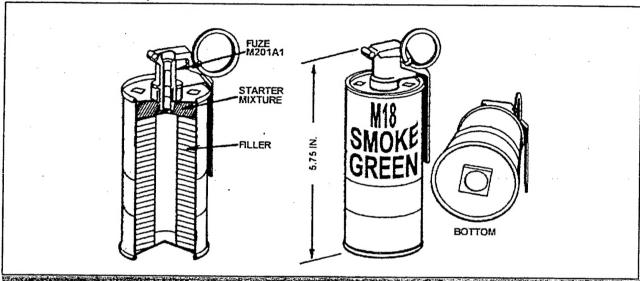
HBSL = Health-Based Screening Level

APPENDIX E FACT SHEET SUBMITTED TO AEC

United States Army Environmental Center Pyrotechnics Fact Sheet

M18 Green-Colored Smoke Grenade

Department of Defense Identification Code: G940



Breathing air emissions from the green-colored smoke grenade will not impact the health of residents who live near Army training facilities.

WHAT ARE PYROTECHNICS?

The terms pyrotechnics and fireworks are often used interchangeably. Pyrotechnics are devices that give off smoke, light, and/or a loud noise when activated. In the military, pyrotechnics are used for signaling, obscuring, and illuminating during training and combat.

WHAT IS THE M18?

The M18 smoke grenade is a type of pyrotechnic device used by troops for ground-to-ground or ground-to-air signaling. The M18 may be filled with one of four different smoke colors. These different colored smoke signals can be seen over great distances when used against a terrain background of contrasting colors. The M18 is 5.75 inches long, 2.50 inches in diameter, and weighs 19 ounces.

HOW IS THE M18 USED?

The M18 contains a delay-igniting fuze that smoke is not released immediately after the grenade is activated. This allows the user to throw the grenade, usually to a distance of about 35 meters (115 feet) before smoke is produced. The M18 will emit a cloud of colored smoke for 50 to 90 seconds. This colored smoke can be used for different purposes. example, it can be used to mark friendly force locations for other ground troops. It can also be used to mark a landing zone during operations such as medical evacuation.

WHERE IS THE GREEN-COLORED M18 USED?

The green-colored M18 is used during many Army training events. These

events are held at nearly every Army training installation. At most locations, the training areas are at least 1000 meters (over half a mile) away from populated areas. In general, seven of these items are used during a day of training, which typically occurs five times per year.

WHAT IS IN THE GREEN-COLORED M18?

The body of the green-colored M18 consists of a thin cylinder of sheet metal that is filled with a smoke mixture containing green dye. The filler is topped with a starter mixture composed mostly of potassium nitrate.

WILL BREATHING AIR EMISSIONS FROM THE GREEN-COLORED M18 AFFECT MY HEALTH?

To answer this question, the U.S. Army Environmental Center tested the air emissions from the green-colored M18. The U.S. Army Center for Health Promotion and Preventive Medicine then determined if there would be a potential for effects health inhalation to residents living near training areas. Results showed that residents breathing air as close as 100 meters (328 feet) from the activation site are safe from these emissions.

HOW WAS THE STUDY DONE?

To gather data for the study, airborne emissions were collected by activating the green-colored M18 in a test chamber. The air in the chamber was tested to identify the types and the amount of substances released. More than 300 substances were looked for during this part of the study.

This information was then used in an air model (a computer program that allows estimation of air concentrations) to

determine the amount of each substance, to which someone living near a training area might be exposed. concentrations Downwind were estimated based on a typical use scenario for the green-colored M18. Since the study does not look at a specific training area, the assumptions used in the model will in most cases. higher predict downwind air concentrations than those expected at an actual training site.

These estimated air concentrations were then compared to safe screening levels established by the U.S. Environmental Protection Agency and other agencies. If the air concentrations are below these screening levels, they are considered safe for everyone, including sensitive people such as the sick, elderly, and children.

WHAT ARE THE LIMITATIONS OF THIS STUDY?

Many steps were taken to ensure that the results of this study are protective of everyone who lives close to training areas. However, limitations do exist with this study. For example, the study does not consider exposure to other types of munitions that could also be used during the same training event. Due to these limitations, conservative model conditions were used to ensure the protection of public health from inhalation of the green-colored M18 air emissions.

WHERE CAN I GET MORE INFORMATION?

For more information on the M18 and other military munitions call the Army Environmental Hotline at 1-800-USA-3845, visit our website at www.aec.army.mil, or email us at t2hotline@aec.apgea.army.mil.